

# 6 Understanding Differentiation of Health in Late Modernity—by Use of Sociological Systems Theory<sup>1</sup>

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## 1. Introduction

### **A systems-oriented conceptual framework for defining, observing and intervening in human health**

To understand health as a social phenomenon in history, especially in modernity or in present late modernity, a refined conceptual framework of human health is needed. Such a framework, or even better, a model or a theory identifies defining and differentiating states, conditions and determinants of health as well as provides a foundation for practical applications to intervene into the production of health.

Within the context of this book, health is a concept as defined by the World Health Organization (WHO 1948)<sup>2</sup>, on which the Ottawa Charter on Health Promotion (WHO 1986) also is based<sup>3</sup>. Therefore, the different states and multidimensionality of positive and ill health, the three-dimensionality of physical, mental and social

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<sup>1</sup> This as any of the other chapters owes much to the intensive process of discussions between the authors of the different chapters of this book. My thinking concerning health in late modernity also has been influenced continuously by my colleagues at the Institute of Sociology and the LBISHM of the University of Vienna, especially Rudolf Forster, Karl Krajcic, Christina Dietscher, Wolfgang, Dür, Peter Nowak und Ursula Trummer. The text has profited considerably by discussions with and reading by Marina Fischer-Kowalski and professional editing by Andrea Neiman. Thanks also go to my assistants Katrin Uhlik and Simone Hofer and my secretary Brigitte Frotzler for different kinds of support in preparing this chapter.

<sup>2</sup> Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. (WHO 1948)

<sup>3</sup> Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being. (WHO 1986)

health, and the distinction of health as a subjective experience on the one hand, an objective resource or capacity on the other hand, should be, and is represented. It is in this chapter, that the concept of health shall be further explored and explained within the basic context of (sociological) systems theory.

Indeed, it is the purpose of this chapter to provide an understanding of the widening and differentiation of social processes relating to health in late modernity. This chapter introduces, employs, criticizes and develops the neo-classical (as compared to Talcott Parsons classical) systems theory of the German sociologists Niklas Luhmann (1927–1998), as it relates to health matters. This kind of universal social theory offers concepts that help to differentiate between traditional and modern society from a macro, meso and micro perspective, as well as allows describing specific features of present society in late modernity. Yet, sociological systems theory has been applied to analyses of health only marginally. Therefore, it will be necessary to further specify and develop some health related key concepts. This mainly holds true for a systemic understanding of human physical, mental and social positive and ill health. Based on a rather complex definition, employing Luhmann's not less complex conceptual framework for function systems, an analysis of health care and public health in modernity, and of health related services and health promotion in late modernity is offered. By that, the chapter focuses on the understanding of health in modernity by sociological systems theory. The other interesting perspective, how a better use of sociological systems theory *in* health care and public health could improve their effectiveness, is left for another publication. By its universal character, sociological systems theory is rather abstract and somewhat tedious to follow. So, probably is reading this chapter. Hopefully, the extra effort will be rewarded by some relevant insights into more adequately approaching and improving health in late modernity, insights to be gained best when using systems theory

## 2. Health of Living Systems—A Quality Generated by Reproduction of the Living System in Its Environment

In systems theory the starting distinction for observing phenomena is the difference of **system** vs. its (relevant) **environment**. For a **living** system this implies that the system has to **reproduce** itself continuously or it will die as a system. The living system has to produce its distinct identity, specifically its boundaries, by itself, but within a relevant environment. To maintain itself, a living system has to relate to its environment, partly by fencing itself off from it, to stay distinct, and partly by using its resources, to reproduce itself. Therefore, problems of closure and openness need to be addressed within and by a living system. The concepts of autopoiesis and structural coupling, developed by Maturana and Varela (Maturana and Varela 1987), and introduced by Luhmann (Luhmann 1997; Luhmann 1995) into the sociological systems theory, provide one specific way to model these problems To keep its specific identity in an environment, a living system has to be

able to use the difference of system vs. environment within the operations of the system. In other words, observation of self must be distinguished from observation of non-self. Within this kind of framing, reproduction of a system at a certain point in time has to be understood partly as determined and influenced by the history and the characteristics of the system itself and partly by characteristics of the systems' relevant environment. That will have consequences not only for understanding the re-production of health attributed to a living system, but also for possibilities of intentionally influencing the natural or generic reproduction of the system by specific interventions. These starting assumptions may sound rather abstract as they stand now, but they will become much more concrete in the course of this chapter.

The result of ongoing or past reproduction of a living system can be judged as more or less successful, with respect to the variety of present and future options for the system, from the perspective of the system itself or from an external observer. As far as the present state of the system is concerned, two dimensions can be distinguished: the degree of positive (well-) or negative (mal-) **functioning** (or disablement), and the degree of positive (well-feeling) or negative (mal-feeling) **self-experiencing** of the system. Both can be combined to actual well-(or mal-) **being** of the system. With respect to the future of the system, the two most important dimensions are expected quantity, i.e. **longevity**, of survival (measured as life expectancy) and expected quality of future living, i.e. **quality of life**. Both dimensions sometimes are measured in combination by Disability Adjusted Life Years (DALY's). These two capacities are what we will be addressing as the living systems "**health**". Good health is defined to be a good capacity for survival and enjoyment of life. **Ill health** (illness, sickness and disease, impairment and disablement) means that a living system has a restricted capacity for survival and enjoyment of life. So health and illness mostly as unintended but more and more also as intended consequences of living are profoundly related to the very existence and reproduction of a living system. Using these two perspectives the system can observe, monitor and evaluate itself, or be observed, monitored and evaluated by others. But health and illness are rather broad and complex umbrella concepts, under which the actual and future existence, functioning and experiencing of living systems can be addressed. Later, when we discuss societal reactions to health and illness, we will have to look again at differing consequences of their specific aspects for societal attention, cultural formation and opportunities for intervention.

To describe the reproduction of a living system in more detail, it is necessary to distinguish between **structures** vs. **processes** of the system, separating the living system itself from the environment in which it lives. Structures can be understood as patterns of related elements; processes can be understood as patterns of related events or operations occurring in time. Using Weick's (Weick 1976; Weick 1985; Weick 1995) terminology, structures are described best as patterns of more strictly coupled elements as against processes as patterns of more loosely coupled events. Therefore structures usually frame or condition processes, but in time also structures can be changed or developed by processes. The behaviour of

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a living system is determined by its anatomy, but in time behaviour may develop anatomy in a certain direction, as could be observed impressively with Arnold Schwarzenegger, when he was a young man.

Following quality theory (Donabedian 1966; Donabedian 1990) or the European Foundation of Quality Management-model (EFQM 1999), structures and processes together can be understood as **enablers** for specific **outcomes** (or outputs) of the system, or for **effects** (or impacts) the system has on its environment. Usually outcomes and effects are understood as intended by specific actions of the system, whilst outputs and impacts just happen as a consequence of ongoing behavior of the system. Therefore, outcomes and effects are conceived as specific subsets of outputs and impacts. This kind of thinking has been developed for business organizations as a specific type of social systems first and later been adapted for non profit organizations (NPO's) as well, but it can be generalized for all kinds of systems, including living systems.

Like in quality philosophy, healthy as a specific criterion of quality cannot only be applied to outputs or outcomes, but to structures and processes of a system as well. This kind of thinking includes the assumption that healthy structures are a precondition for healthy processes, and both are preconditions for healthy outputs/outcomes. From that also follows that health determines health, or health (in the past) is the best predictor for health (in the future). This statement formally is tautological, but it is also empirically true. For the health related qualification of structures and processes of a living system, a specific terminology was introduced by Aaron Antonovsky. Ongoing reproduction or living may result in more or less **salutogenic**, i.e. health producing, (Antonovsky 1979; Antonovsky 1996), or **pathogenic**, i.e. also illness producing, structures and processes, measured by their fulfillment of—or deviation from—normal or ideal types of appearance, or by their correlated effects on health or illness of the system in the future. The same kind of classification following the same kind of logic can be used for characteristics of relevant environments of living systems; they can also be classified as more or less salutogenic or pathogenic for the reproduction of specific living systems (cf. Figure 6.1). A similar distinction may be drawn between salutogenic **resources** and pathogenic **risk-factors**, and applied to characteristics of living systems as well as to characteristics of their relevant environments. Within the ecological discourse oriented at sustainability, the effects of the reproduction of a system on its environment are observed: The relevant distinction here is whether these effects of system reproduction are making this environment more or less salutogenic or pathogenic for the quantity and quality of survival of this or similar kinds of living systems in the future.

We still need to clarify the specific distinction between **health** and **illness** and what kind of relationship can be specified between the two concepts (Pelikan and Halbmayer 1999). Within our model of reproduction of a living system within an environment, both health and illness have to be seen as determinants as well as results of the ongoing reproduction or living of the system. Reproduction usually produces health, as a precondition for further survival, but eventually reproduction will also generate illness, as a precondition for (premature) death. In more concrete

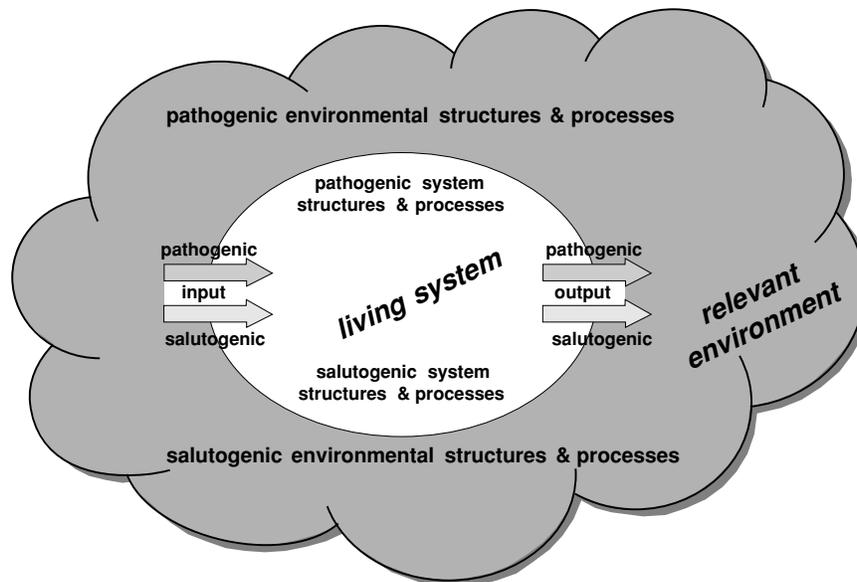


FIGURE 6.1. Schematic Representation of Salutogenic and Pathogenic Structures, Processes, Inputs and Outputs relevant for a Living System Interacting with its Relevant Environment.

terms, we can speak of **positive** health as something that is enabling for (better) survival and ‘fighting’ against **negative** or ill health, or illness. With that distinction, we can define a formula for the relationship of positive and ill health to health: the amount of total health of a living system is its amount of positive health minus its amount of illness. (Of course it could be debated, if the relation should be regarded as additive, but this seems to be a simple and plausible assumption.) At the same time, one has to be aware of an important asymmetry between the two: positive health can exist without illness, but illness always needs a minimum of positive health to host it, so to speak. So, logically, it would be more correct to speak of illness “of” or “within” health, than of illness “and” health. (Metaphorically, we could understand the relationship of the two as one of host and parasite.) Therefore, it does not make much sense to treat (positive) health and illness as opposites, as some do. Only death and life form an either-or-relationship, and even here in case of dying, i.e. crossing in terms of Spencer Brown, there seems to be some zone of indifference, depending on the method of observation. In contrast, (positive) health and illness do co-exist with each other, at least for a broad section of the spectrum. Only lethal illness will eat up (positive) health totally, in time. So one should better treat (positive) health and illness as the extreme poles of a continuum of different mixtures of positive health and illness, with optimal positive health without any disease at one end, and minimal positive health with a maximum of disease at the other (cf. Figure 6.2).

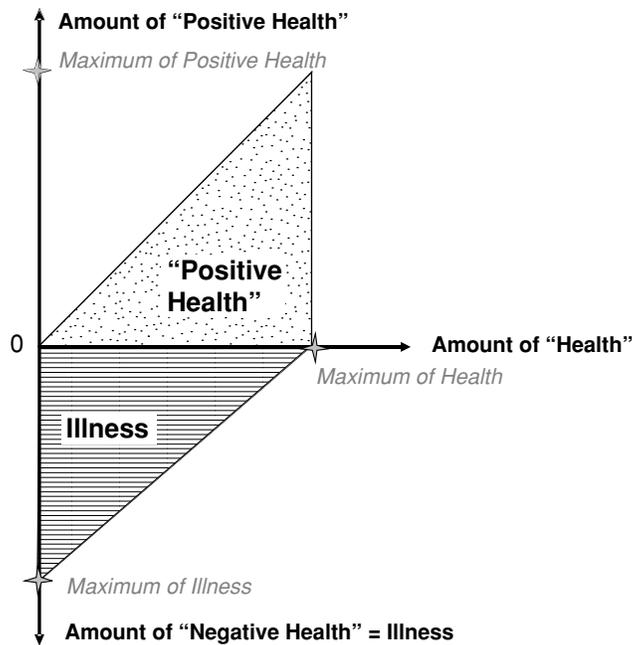


FIGURE 6.2. Schematic Representation of Positive and Negative Health Jointly Constituting a Health Continuum.

(Positive) health and illness do co-exist, but not independently from each other in time. Since, good positive health is a precondition to control and fight illness, and illness has the potential to reduce positive health in the future. So, positive health is endangered by illness and by accidents, but also by another kind of biological process, ageing. Ageing, partly depending on the kind of living, will, to a certain extent, reduce or limit positive health, following the life-cycle of an organism.

There also is another important asymmetry concerning the appearance and extension, and by that also the perceptibility and definability of positive and negative health. Positive health usually is taken for granted as a normal, given, general, diffuse, unconscious, rather latent or virtual state of being. In contrast, ill health, especially acute ill health, is experienced as a deviant or aberrant, specific, manifest or actual state, or even as a dramatic event, which by experience of pain, discomfort and disablement forces attention and reactive action. Ill health makes a difference by interrupting and changing the quality of everyday life, often in a way not to be turned down. Ill health introduces a new specific quality of functioning and experiencing, while it is difficult to distinguish positive health as something specific and distinct from everyday survival, living, or living well. So we will not be surprised to find that societies and individuals have a much more elaborated code for perceiving and observing ill health, and react with priority to manifestations of ill health, while good health may remain relatively unnoticed. Looking at

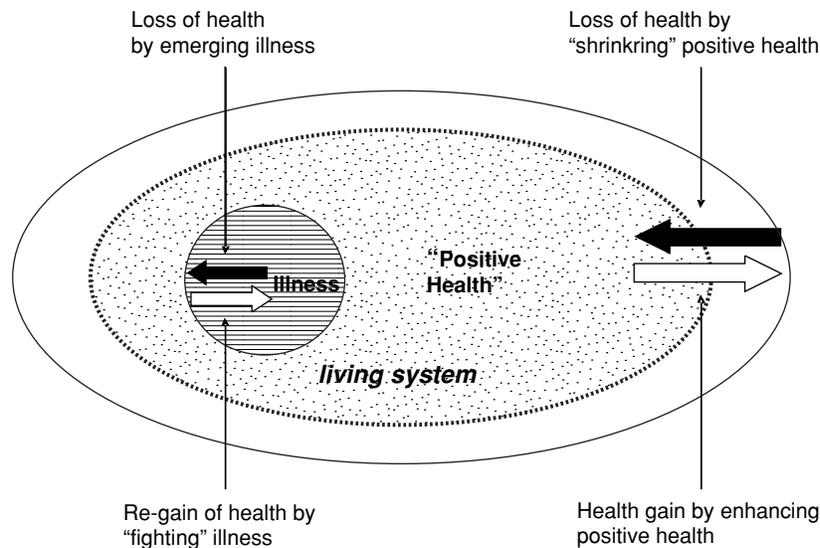


FIGURE 6.3. Schematic Representation of Illness as a Parasite of Positive Health. A Model by which 4 Different kinds of Health Related Outcomes and Processes are Identified which can be Intervened Separately or in Combination.

positive and negative health as a continuum, ill health does vary between better marked extremes, namely absence of ill health and death, while positive health can vary from some minimal quantity of living up to some kind of ideal, optimal, maximum quantity of well-functioning and well-feeling. Notwithstanding these considerable differences in appearance and experience, both these relevant and valued qualities associated with living can be influenced and changed by focused human attention and directed interventions into the preconditions, structures, and processes, of living.

For practical reasons it is important to observe both positive health and illness independently (cf. Figure 6.3), and be aware that there are different specific determinants for positive health, mainly resources, and for illnesses, mainly risk-factors, and therefore health and illness can be influenced directly and independently, but by processes of interaction they will also have indirect effects on each other.

So positive health and ill health do not only vary independently to a certain degree, but in human society both can also be maintained and improved by four different and independent principal strategies (cf. Table 6.1). In more detail, these strategies are:

- reactive **treatment** of actual illness or impairment (by measures of specific cure and general care),
- prophylactic **prevention** of future illness and impairment (by controlling specific risk factors),

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TABLE 6.1. Principal strategies to maintain and improve human health

Oriented at	Positive health	Ill health
Maintaining health	Protection of positive health	Prevention of ill health
Improving health	Development of positive health (including rehabilitation)	Treatment of ill health

- proactive **protection** of positive health (by controlling of functioning—no over-, under- or misuse—and by providing sufficient and adequate general resources, and by specific protective measures) and
- development** of positive health (through specific training and exercise, including rehabilitation after impairments by illness and accidents).

The distinctions or boundaries of these four strategies are somewhat fuzzy, especially that between prevention and protection. Often to be most effective, the strategies better are applied in combination, e.g. treatment and protection, but also protection and prevention or treatment and development.

Taking into account that interventions can address the system and/or its environment, a more complicated picture arises (cf. Table 6.2). Depending upon the

TABLE 6.2. Principal strategies to maintain and improve health by influencing living systems & relevant environments

Oriented at	Positive health	Ill health	Positive health	Ill health
By influencing	System	System	Environment	Environment
<b>Maintaining health</b>	<b>Protection of positive health</b> by improving individual resource-management	<b>Prevention of ill health</b> by improving individual risk-management	<b>Protection of positive health</b> by developing infra-structures & incentives for resource-management	<b>Prevention of ill health</b> by developing less risky environments & incentives for risk-management
<i>Specific intervention</i>	<i>(Health education for positive health protecting lifestyles)</i>	<i>(Health education for ill health preventing lifestyles)</i>	<i>(Development of resourceful living conditions)</i>	<i>(Development of less risky living conditions)</i>
<b>Improving health</b>	<b>Development of positive health</b> by improving individual exercise & training	<b>Treatment of ill health</b> by cure & care for individuals	<b>Development of positive health</b> by investing in infra-structures & incentives for exercise & training	<b>Treatment of ill health</b> by investing in infra-structures & incentives for cure & care
<i>Specific intervention</i>	<i>(Health education for health promoting lifestyles)</i>	<i>(Self-/ lay-/ professional management of illness)</i>	<i>(Development of health promoting living conditions)</i>	<i>(Development of specific conditions for management of illness)</i>

strict or loose, structural or operative, coupling of system and relevant environments, the effectiveness and efficiency of these interventions will be different. It will be more direct and visible and therefore also more spectacular, to intervene in the actual pathogeneity of the system (and less so in the pathogeneity of its relevant environment) and less direct and visible to intervene in the salutogenicity of the system (and even less so in the salutogenicity of its relevant environments). But, interventions in environments can improve the health of many different living systems at the same time, and investments in the salutogenicity of a system can improve its resistance to many different potential illnesses within a long time span in the future. So any serious comparison of health related strategies of intervention or investment has to take into account factors of scale and time.

This conceptual model for the health of living systems, admittedly and already, bears a certain complexity, a complexity that cannot be reduced without risking a serious distortion of the reconstruction of the health reality. Nevertheless, the conceptual model will have to become even more complex, when we try to specify it for more specific phenomena of human health.

### *1.2. Human Health: Result of the Interplay Between Three Different Systems, Constituting the Human Individual*

What is the **system** in question in the case of **human health**? The answer, of course, depends upon the perspective we choose. We are well advised to take a broad rather than too narrow a perspective. So we start with the human individual as the basic carrier of the quality called “health”. Following sociological systems theory and respecting the WHO definition of health, we cannot describe the human individual as just one system. Rather, following a paradigm or model proposed by Luhmann (Luhmann 1990), and specified by Simon (Simon 1995), Pelikan & Halbmayer (Pelikan and Halbmayer 1999), Bauer et al. (Bauer et al. 2003, Bauer Davies and Pelikan 2006), we will have to understand the individual as the structural and operational coupling of three different kinds of systems. The three coupled autopoietic systems are: an organism or body, a mind or mental system (consciousness in Luhmann’s terms) and a social status or a person (again in Luhmann’s terminology) (cf. Figure 6.4).

Why three different systems? Because: organism, mind and person have to reproduce themselves by different basic operations, using different kinds of environments that cannot be reduced to one another. Organisms reproduce metabolically, minds with ongoing thoughts, and persons by communication, especially communication of decisions with other persons or collective social actors. Of course, there is no natural person or mind without a living organism as a material basis. Mind and person are better to be understood as evolving co-evolutionary on the basis of a living organism. But in an extreme case, a body can be kept alive without a functioning mind, and—socially—still be treated as a person. So for the three systems constituting the human individual, there is certain independence, represented by autopoiesis, and certain interdependence, represented by structural

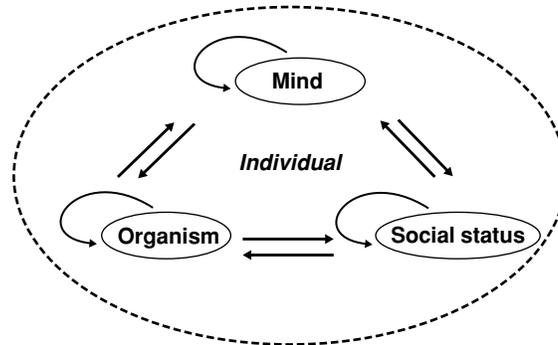


FIGURE 6.4. The Individual as a Structural Coupling of three Systems: Organism, Mind and Social status

and operative coupling. Interdependence also means circular causal influences of the organism on the mind and the person, but also the other way round from the person on mind and the organism. For living, or for purposes of reproduction, the three systems of the individual have to rely on and use each other: The body is needed to act out plans developed by the mind, which, in due time, could develop qualities of the body, and by that, might change experiences of the mind as well. For example, if the mind thinks, that a trained body is more attractive, he perhaps makes his body go for a run every day. The consequences of the trained body may be not only a better functioning body and more positive attention socially but a mind that feels more in control as well. For taking part in social communication, the mind (for selecting information and understanding messages) as well as the body (for perceiving and sending messages) is needed. The social status of a person is limited by the experiences of the mind and the actions of the body, but, over time, decisions of the mind and actions of the body can develop the social status of the person in the future. As far as social status is concerned, processes of individual performance and achievement and societal processes of ascription and access together determine the social position of an individual in every social system.

Within a lifetime, or in ontogenesis, the opportunities for development, the flexibilities for change and the general variety of the three systems are different: for the body they are more biologically limited, for the mind they are more flexible by use of symbolic learning, and are, at least in modern open societies, most open for variation of the social status of the individual. From that also follows that body and mind are more strictly coupled than the person is either to mind or to body. In human history there was much less biological evolution of the human body, compared to the cultural evolution of the human mind, and even less compared to the social evolution of possible social status of the person in society. There is much less possible variation between adult human beings for the amount of their physical strength, compared to their amount of knowledge or their wealth.

TABLE 6.3. The three systems and relevant environments of the human individual

Dimensions/levels	System	Environments
<b>physical</b>	organism	nature
<b>mental</b>	mind	culture
<b>social</b>	person	society

All three types of systems are further differentiated within themselves, the organism into biological subsystems or organs, the mind into psychological subsystems, and the person by inclusion and participation in different types of social systems. In modernity the most relevant of these are the family, education, economy, law and politics.

What are the relevant **environments** for conditioning or influencing reproduction of organisms, minds and social persons? Here, we can only give a rather abstract answer: there is a bio-chemical-physical material environment relevant for the metabolism of the organism, a perceivable and meaningfully coded cultural environment for the psycho-cultural reproduction of the mind, and a socio-economic environment of society, as a hybrid of the material and the cultural, for the socio-economic reproduction of the person (cf. Table 6.3).

Again, no society (of a human population, material artifacts and social institutions) and no culture (symbolic language and other kinds of semantics) persists without a material or living substrate. And again, a co-evolutionary relationship of society and culture has to be assumed. As far as necessary conditions and causal influences are concerned, the material environment influences primarily the reproduction of the organism, the cultural environment primarily the reproduction of the mind and the socio-economic environment primarily the reproduction of the social status of the person.

What does that mean for human positive or ill **health**? We have to distinguish between three different kinds of positive and three different kinds of ill health, all in all between 6 dimensions and types of indicators for human health (cf. Table 6.4)

TABLE 6.4. Dimensions and indicators for positive and ill health relating to the three systems of the human individual

Systems of the individual	Positive health	Ill health
<b>Organism</b>	Physical well-functioning and well-being (fitness & wellness)	Accidents & actual and chronic diseases
<b>Mind</b>	Mental well-functioning and well-feeling (fitness & wellness)	Mental disturbances & actual and chronic mental diseases
<b>Person</b>	Social inclusion in relevant societal sub-systems & participation in social resources (citizenship, formal education, work, family & social networks, wealth, prestige etc.)	Acute & chronic personal social deviances (illegality, analphabetism, unemployment, poverty, social isolation, being an outcast etc.)

TABLE 6.5. Salutogenic and pathogenic factors in the three types of relevant environments for human individuals or populations

Enviroments	Salutogenic	Pathogenic
<b>Nature</b>	Basic metabolic contexts & resources (climate, air, water, food, light etc.)	Acute natural catastrophes & detrimental chronic conditions (e.g. pollution) & scarcity of necessary resources
<b>Culture</b>	Basic cultural orientations & values (like tolerance,	Anomia; ethnocentrism, fundamentalism
<b>Society</b>	Basic societal institutions & resources (peace, justice, wealth, social capital, trust, etc.)	Acute & chronic detrimental societal conditions (e.g. war, civil war, terror, instability, extreme inequality, extreme competition)

Correspondingly we can name salutogenic and pathogenic factors in the relevant environments for the health of organism, mind and person (cf. Table 6.5).

Taken together, we get a complex multi-factor model of natural or generic health development (Bauer, Davies, and Pelikan 2006) which specifies a complex etiology of health and illness and by that also allows for a variety of specific interventions to advance and promote health in a systematic and purposeful way. So this model also should be an adequate basis for reconstructing the social organization of dealing with health and illness within different types of society.

### 1.3. Summary

Within the framework of systems theory major differences are introduced to specify matters relating to human health. These differences mainly are system vs. environment; structure & process of systems vs. its output, outcome or impact; positive vs. ill health as an output of systems reproduction; salutogenic (infrastructures & resources) vs. pathogenic (risk factors) characteristics of systems & their environments; physical vs. mental vs. social positive & ill health of human individuals characterized by organism, mind and social status within relevant environments of nature, culture & society. Together and in combination these differences describe a complex health space with multiple opportunities for etiology of and social interventions in health and illness. As will be shown in the following analysis, societies differ in the way they use different parts of this health space to socially deal with health and illness. Clinical medicine and public health seem to be extremely differing approaches in dealing with health policy.

## 2. Health in Modernity

To adequately describe, analyze and understand specific practices of and discourses on health in late modernity<sup>4</sup> we have to bear in mind the broader context of the

<sup>4</sup> Late modernity (or liquid modernity) is a term for the concept that some present highly developed societies are continuing developments of modernity. A number of social theorists

meaning and processing of health in modernity<sup>5</sup>. Until now, a general conceptual framework for defining health, and strategies of health care, public health and health promotion has been developed. What still is missing is an adequate scheme for understanding (late) modernity. By modernity we mean the context of modern versus some kind of traditional society, and by late modernity, we mean the present developed phase of modernity. Some (e.g. Lyotard 1984) like to call this phase post-modernity or postmodern society, but we prefer following e.g. Giddens (1991) to speak of the **late modern society** and leave the term post-modern for a specific discourse of self-description within late modern society. To proceed with our health focusing endeavor, we do need a clear understanding of modern and late modern society. Sociological systems theory does help to clarify these concepts.

Using neo-classical sociological systems theory à la Luhmann, modern society can be described as a specific type of society, characterized by a specific mixture of types of social differentiation. Modern society primarily is differentiated functionally, and only secondarily by stratification and segmentation. Segmentation is denoting that similar social parts exist side by side; stratification is identifying different social parts ordered hierarchically. Whilst **functional differentiation** is defined by principally different, specialized social parts functioning autonomously side by side but inter-dependent by some kind of division of labor. Functional differentiation in this type of societal theory is seen as the basis of **individualization** and **globalization**, world-wide **urbanization**, and of what some would call a society of **organizations**. It is thus, functional differentiation of different societal sectors that is seen as the root of some of the most discussed tendencies, forces or dynamics of the present global or world society. It is useful that sociological systems theory—as a principally universal kind of theory—has something to say on these important phenomena. But, in our context the dominant question is, what follows from functional differentiation for the analysis of health in modernity? To answer this, we first will need a better understanding of the meaning of functional differentiation.

Functional differentiation assumes that in modern society there exists at the macro level specific function systems, at the meso level specific types of organizations, and at the micro level specific social roles have evolved. These social systems or arrangements do fulfill important functions for the whole of society, as well as

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(Beck 1992, Giddens 1991, Lash 1990) critique the idea that some contemporary societies have moved into a new stage of development or postmodernity. On technological and social changes since the 1960s, the concept of “late modernity” proposes that contemporary societies are a clear continuation of modern institutional transitions and cultural developments. (Wikipedia 2006, [http://en.wikipedia.org/wiki/Late\\_modernity](http://en.wikipedia.org/wiki/Late_modernity))

<sup>5</sup> Modern can mean all of post-medieval European history, in the context of dividing history into three large epochs: Antiquity or Ancient history, the Middle ages, and Modern. It is also applied specifically to the period beginning somewhere between 1870 and 1910, through the present, and even more specifically to the 1910–1960 period. (Wikipedia 2006, [http://en.wikipedia.org/wiki/Late\\_modernity](http://en.wikipedia.org/wiki/Late_modernity))

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solve problems and/or offer solutions, achievements, performances necessary for the functioning of other function systems, as well as for organizations and individuals. In contrast to Parsons (1951) theory of social systems, Luhmann notes that the number and the specific kinds of function systems cannot be deduced or do not follow logically from theory. To Luhmann, there remains as an empirical question what sort of and how many function systems have evolved in societal evolution so far. There is consensus within the community of sociological systems theory that at least economy, politics, law, religion, education, art, science, mass media and family can be observed or reconstructed as distinct function systems in modernity. But there is disagreement and discussion within the scientific community, if e.g. social work or nursing should be treated as fully developed and differentiated function systems

Function systems are defined as a specific type of social system as compared to interaction systems, organizations or society at large. But as social systems they have in common to be communication systems, i.e. their elements are communicative events in time. A communicative event is seen as a sequence of three selections: the selection of *information*—for a *message* by alter, which is selected for *understanding* as a message, and not just perceived as information by ego (in terms of the framing of double contingency, shared by Luhmann with Parsons). Further, function systems, as with any other social systems, are understood as autopoietic systems, meaning they have to produce the communicative events, they consist of or operate with by themselves—meaning, in a self-referential, operationally closed manner. To make this improbable communicative processes happen, function systems in general do use binary codes (like true/false in science) for their closure or demarcation of boundaries, and programs (like theories and methods in the case of science) for their openness to relate to relevant environments. Some do also make use of symbolic generalized media (truth in the case of science) to make acceptance of their specific communications more probable and have developed symbiotic mechanisms (like perception in the case of science) as a specific form of relating to the human body of the persons involved. Some have developed specific reflection theories (like theory of science for the function system of science) to reflect and try to control their self-steering in societal evolution. These concepts are the instruments that sociological systems theory offers for analyzing the social processing of health in modern society. Within this paradigm of modern society, regarding to matters of health, at least two types of questions arise. First, is there at least one or are there even more distinct and specific function systems, specialized in processing problems of human health in modern society? And second, what is the meaning of health as a reference in other function systems, fulfilling primarily their different specific functions, e.g. meaning, in science, are there developing specific sciences related to health? For the first type of question, an answer has been given by systems theory, but an answer upon which critical thought and improvement can occur. Concerning the second question, there is not much of a tradition in system theory to follow this line of thinking, but of course, this then provides an opportunity to begin.

### *2.1. Medicine or Care of Ill Health—As a Specific Function System in Modern Society*

**Luhmann** has not written a specific monograph, as he has done on the major function systems, on health care or medicine, but he has published three papers related to health in modern society (Luhmann 1983a; Luhmann 1983b; Luhmann 1990). In these papers he assumes that there has evolved a specific function system dealing with health in modern society which he interchangeably called “treatment of disease”, “treatment of ill persons” or “medicine”, not carefully distinguishing between the three terms. Using the general characteristics, he had developed for analyzing function systems, he characterized, what here will be called the “function system for care of ill health”, with ill/healthy as the binary code and diagnostic methods and therapies as programs. He also assumed that, in contrast to other function systems, health care has not developed a specific generalized symbolic means of communication, a symbiotic mechanism nor a complex theory of reflection. But, as he describes doctor/patient as the specific role relationship for including persons in this function system, he mentions the hospital and medical practice as a specific type of organization of this function system.

Luhmann’s system theoretical analysis of health care has not been taken up much in sociological or medical sociological literature, with two major exceptions: **Bauch** (Bauch 1996; Bauch 2000a; Bauch 2000b) and of **Pelikan** et al. (Pelikan and Halbmayr 1999; Bauer et al. 2003; Bauer, Davies, and Pelikan 2006; Forster, Krajic, and Pelikan 2004). Bauch in most respects follows Luhmann’s analysis, but he criticizes him for not taking into account newer health related developments and therefore proposes a much wider binary code; that of hindering vs. promoting health or even life.

**Pelikan** et al. follows Luhmann in a number of respects, but furthers his application of some of the general concepts related to the specific case of health. Besides that, they try to make use of the WHO definition of health and the developments it stimulated, especially as it relates to the Ottawa Charter of Health Promotion.

For analysing a function system, the definition of the binary code is decisive, because it marks its identity and boundaries. Luhmann here opted for illness vs. health or ill vs. healthy. Illness or ill is stated as the value of connectivity (to start interventions) and health or healthy the value of reflection (to stop interventions). This specification can be questioned, theoretically as well as empirically. Empirically, it can be argued that for a long time health care, or medicine, did not actually use positive health as a reflection value, but limited itself to the management of illness. Medicine has been criticized, by medical sociology, social medicine and other critics (e.g. Illich) for limiting itself to a medicine of repair. In its actual practice, as compared to its self-description, medicine uses “absence of disease” as a value of reflection or stopping rule, and “presence of disease” as a value of connectivity or an entrée billet to its area of responsibility. Therefore, at least for a certain period in modern history, the binary code of health care or medicine can be described more adequately as presence vs. absence of illness (broader) or of disease (more narrow). Theoretically, two arguments can be made. First, from Luhmann’s own

judgment that medicine has not yet developed a proper reflection theory follows that health as the value for reflection has not been properly specified for any practical use. Second, accepting the argument developed earlier in this chapter that only death and life are logically proper opposites, but positive health and illness do co-exist besides each other over a broad spectrum, and do follow different salutogenic and pathogenic etiologies, and furthermore, can be influenced by different types of interventions; it does not make sense to combine them in one code, but rather to specify two different codes, and relate these to physical health, specifically. These could be presence vs. absence of *physical* illness (disease) for ill *physical* health. For positive *physical* health, a somewhat more complicated construction has to be proposed: suboptimal vs. optimal *physical* positive health. An observed deficit in actual positive *physical* health, as the value of connectivity, would allow for starting some kind of intervention, and a theoretically or empirically defined criterion of optimal positive *physical* health—as the value of reflection—would serve to define some kind of stop rule for ending the intervention. Of course, the two binary codes can be combined in more complex programs of medical practice, like in surgery, where anaestisologists are responsible for the patients' positive health, so that surgeons can concentrate on dealing with the pathogenic aspects. It can and will be argued that the success of modern medicine, historically, is related first to its focusing on care of ill *physical* health or disease. But, in late modernity it can be observed that medicine is more and more following the code related to influencing positive *physical* health as well. Therefore, medicine and cure of disease are no longer identical, but are becoming differentiated. So, medicine more and more grows into the shoes of "health care", in the proper and broader meaning of the term.

But, before we follow this line of reasoning further, we must first analyze modern medicine or the system of **care of ill physical health**. Referring to the code of presence vs. absence of physical ill health successful diagnostic and therapeutic **programs** have been developed, jointly by clinical medical science and clinical medical practice, based upon natural science knowledge of the functioning of the human organism. But what about a specific **medium** of communication and a specific symbiotic **mechanism** for the function system of curing physical ill health? Luhmann, and Bauch (who follows Luhmanns argumentation) do claim, that there is none. This claim seems to be problematic. It can be argued that the science-based system of medical terminology for differential diagnostics, even codified internationally in the ICD<sup>6</sup>, and for the related system of therapies, defined in

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<sup>6</sup> International Classification of Diseases (ICD):ICD-10 was endorsed by the Forty-third World Health Assembly in May 1990 and came into use in WHO Member States as from 1994. The classification is the latest in a series which has its origins in the 1850s. The first edition, known as the International List of Causes of Death, was adopted by the International Statistical Institute in 1893. WHO took over the responsibility for the ICD at its creation in 1948 when the Sixth Revision, which included causes of morbidity for the first time, was published. The ICD has become the international standard diagnostic classification for all general epidemiological and many health management purposes. These include the analysis of the general health situation of population groups and monitoring of the incidence and

medical textbooks, handbooks, journals and reviews, constitute such a medium. This medium fulfills the criterion of enhancing the probability of acceptance of specific actions, i.e. a specific diagnosis followed by a specific, often highly risky, but still accepted therapy. This medium is not only, but mostly, used in the function system of cure of ill health between doctor and patient (and relatives), and between the different professional providers of cure and care. It is also used in other function systems, like medical research, medical education, and increasingly in economics, politics, mass media and by lay people in everyday life.

There also can be observed at least three different kinds of practices which fulfill the criteria of symbiotic mechanisms, i.e. linking the medium to the human body, like physical force (by police and military) does for the medium of power and governance in politics. In the case of curing ill health, these are the more sophisticated and successful diagnostic and therapeutic interventions for the human body—i.e. pharmacy, surgery, radiology (and laboratory medicine). The fact that there is no well-developed **theory of reflection** for the function system of curing ill health, as Luhmann and Bauch state, and as empirically seems to be true, also can be explained using our assumptions. “Absence of . . .” as the simple value of reflection within the binary code, together with the presence of a practically extremely successful medium of communication and symbiotic mechanisms, speak for themselves, and do not need any specific theoretical reflective legitimating, in contrast to the function systems of politics or education or of public health and health promotion, for that matter.

The specific semantic medium “medical terminology” of the function system for care of ill health allows for a **first** kind of **structural coupling** of the clinical core of this system with two other function systems, **scientific research** and **education**. This coupling is also partly institutionalized in the multi-functional organizational unit medical clinic and the professional role of the (chief) doctor of the clinic. Both institutional arrangements do combine ill health care, scientific research and educative training functions, because the clinical core of all three is in need of the presence of real patients to interact with. A **second** kind of structural coupling with the function system of **economy** is made possible by the main symbiotic mechanisms of ill health cure—pharmacy, surgery, radiology, laboratory medicine—which all allow for and do rely on technical procedures, apparatus and artifacts, which can be produced and distributed as individual goods by the industrial market economy with profit for a partly guaranteed and continuously expanding world market. This kind of structural coupling of the techno-medical complex does guarantee financing of planned continuous scientific and technical

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prevalence of diseases and other health problems in relation to other variables such as the characteristics and circumstances of the individuals affected. It is used to classify diseases and other health problems recorded on many types of health and vital records including death certificates and hospital records. In addition to enabling the storage and retrieval of diagnostic information for clinical and epidemiological purposes, these records also provide the basis for the compilation of national mortality and morbidity statistics by WHO Member States. (WHO 2006, <http://www.who.int/classifications/icd/en/>)

innovation of medical cure and care for ill health, and it assists in making it an industry of growth. A **third** kind of structural coupling can be found with the function system of **politics** or with the state. The strength of this coupling does vary considerably with the kind of political system in which it is developed and promoted. It was and in very few cases still is stronger for real socialist state societies, and it is rather stronger for European welfare states than for more neo-liberal market societies like the USA. Since ill health care always is dealing with the integrity of the body, and more and more of life itself, the practice of ill health care is legally regulated by politics in all modern societies. As examples of stem-cell therapy show, there is a growing demand for legal regulations of new possibilities for interventions that result from scientific progress. But, politics has not always limited itself to regulate who is allowed to do what kind of repair of the body without sanctions. In various political systems, to some extent, politics also has taken responsibility for organizing and providing supply and financing of ill health care. This willingness to take so much political responsibility for health care is rational, since care of ill health is not only a private good in great demand by anybody who is seriously ill, but it is in the interest of society and its members to treat health as a public good. Systems theory oriented analysis of ill health in modern societies shows that not only a thorough understanding of the functioning of the specialized system of caring for ill health is necessary, but also of the relations of this system to other function systems in its relevant societal environment. Sociological systems theory offers a paradigm and concepts that are fit for both types of analysis

## *2.2. Public Health in Modern Society*

The modern state was and is, as far as health is concerned, not only engaged in regulating, organizing and financing care and cure of ill health for individuals but the modern state (as cities and imperia before) was and is also dealing with issues of public health. How is the social place of public health to be understood in modern functionally differentiated society? Has there evolved a distinct and specific function system for public health besides the function system for care of the individual ill health? Or, has public health rather emerged as a set of several specific sub-systems in different function systems like science, education and politics? And, if the latter, what keeps public health together as an identical unity across the function systems which host specific aspects of it? If, first, we look for specific **social structures**, especially for a dominant and specific type of institutionalization, what can we find? Schools, departments, institutes, projects of public health as far as organizational units are concerned. Journals, books, web-sites and other forms of publications as specific public media relating to public health; interactive communication events or processes like conferences, meetings, seminars, workshops for public health. And, specific legislation, budgets, programs and policies address issues of public health in politics. So, we do find quite a number of structures and events with public health as a “sign on the door” (cf. McQueen, chap.). But, do they together form a distinct function system? The answer has to

be, no! All institutional arrangements we find can be assigned either to the function systems of science, education, politics or mass media, as subdivisions, with specific reference to public health. Second, is there a distinct **role-relationship** for inclusion of individuals and other actors, specific for public health? Also, not! Rather, the usual role relationships of the function systems in question are used: teacher/student, researcher/user of knowledge, politician (civil servant)/citizen, author/reader. But it could be argued that a new more abstract kind of role relationship is emerging, that of public health expert/client. This relationship does not lead to a new specific function system, but is realized within the context of other already existing function systems, like the public media or politics. Finally, can we define a specific societal **function** for public health? Yes! This function could be defined as “prevention of physical (mental and social) ill health and protection of physical (mental and social) positive health of specific populations by developing less pathogenic environments (and stimulating less pathogenic behaviours)”. So, it focuses upon two principle strategies of maintaining and improving health (cf. Table 6.11). This function is not fulfilled by the emergence of a distinct and specific function system of its own, but taken over mainly by politics, relying upon and using solutions, achievements, performances of science, law, and—to a lesser degree—education and the mass media.

Even if we cannot find distinct social structures, but rather sub-structures in other function systems, there has to have evolved a specific **semantic** for public health, if only to allow for public health specific sub-divisions in other function systems to emerge. The binary **code** for public health could be formulated as presence vs. absence of pathogenic (risk) factors in environments (including infra-structures) (and behaviours of populations)”. The respective public health **programs**, making this code operational by specifying theories and methods for monitoring of and for interventions into environmental and population risk factors are very heterogeneous due to the many dimensions involved in the development of healthy environments. For changing unhealthy behaviours of individuals and populations, these programs go in the direction of “health education” and media campaigns. There is also the development of a specific domain of public health knowledge. But this does neither rest on sufficient evidence and consensus, nor does it invite improbable behaviour to happen to a degree that would fulfil the criteria of a generalized symbolic **medium** of communication, like it seems to be the case for clinical medicine. Without that kind of specific medium, there is also no specific **sybiotic mechanism** to be expected relating to individual bodies. (As far as health education is considered, the mechanism involved is not related directly to the human body, but to the human mind, and therefore has to use the general means of social communication, and rely on individual perception and learning). Also, a well developed **theory of reflection** can not be expected, since the value of reflection for public health is absence of pathogenic risk factors, which makes an extended theory of reflection neither possible nor necessary.

So, what keeps public health together as a social unity? Semantically, a shared code and a variety of shared programs, which facilitates accumulating shared specific knowledge. Concerning its social structure, a first answer could be, public

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health is a **social movement**, with the aim of assuring and improving the health of populations. Until now, this movement has to a certain extent been successful in initiating and using research, law, education and mass media communication for planning, implementing and legitimising specific public health policies and programs. A second social arrangement is the **coupling** of the different function systems involved, by individuals holding positions in organisations relating to different systems at a time (multi-position holders), or are mobile (as go between) between the systems in their career over time. And a third, intensive **referencing** (e.g. in decision making) of the involved systems on each other, e.g. public health education, public health mass media communication and public health politics on public health research.

But, why has public health not been as successful as (clinical) medicine or the other social movements for health in modernity, which has developed into a specific and remarkably growing function system? If we take the amount of research money and publications, or the number of professionals involved, or money spent on interventions as empirical indicators for success, the answer becomes even more interesting if we accept that clinical medicine has made and is making a smaller contribution to fighting (infectious) disease and increasing life expectancy than measures of public health (Lalonde 1974; McKeown 1976). For a fair answer to this question, we have to discuss the principal differences between the two fields or disciplines in more detail.

Clinical medicine is oriented to treat actual, manifest and severe ill health of single individuals, whereas public health is oriented at avoiding future, possible ill health of abstract populations. (E.g. the medical diagnosis of lung cancer is inviting for a number of possible therapeutic reactions, which will have a probable effect on survival and quality of life of the individual concerned, whereas public health best can assure smoke-free areas which will decrease the probable risk of developing lung cancer in the future.) So medicine is addressing problems of life or death of present individuals, whereas public health is promising to prevent future health problems in abstract populations. Medicine can focus its interventions on individual organisms, whereas public health has to intervene into social living conditions, life-styles and environments of populations, i.e. into the functioning of society itself. So the focus of medicine is more narrow and stable in principle, whereas social living conditions or environments of individual humans are not only much wider, but historically constantly changing over time. For effective diagnosis and therapy, medicine has to rely upon natural and clinical sciences only, whereas public health also needs the less developed psychological and social sciences for effective interventions in human behaviour and society. For medical interventions partly standardized technical solutions are possible, which lead to marketable individual goods, products and services for big populations, forming the basis for an ill health industry of continuous growth, in contrast public health can only partly be addressed with technical solutions; public health depends heavily upon social interventions in social conditions, processes and behaviours. Individuals can be isolated for a specific time span for treatment in specific organizations of a distinct health care function system, which is specialized in the caring of ill bodies, and

is dominated by the medical profession. For public health to be effective, it has to intervene continuously on the daily functioning of *all* organizations in *all* function systems, especially into the economy, and in personal behaviour of *all* individuals. Therefore, the practice of public health is basically political or educational, i.e. trying to influence collective binding decisions for better health from the local to the global level. For technically intervening into human bodies, medicine as a profession has a monopoly and license, whereas the profession of public health just has a specific expert knowledge and an expert status in political, educational and mass media debates. Even for that, public health always has to rely on clinical medical diagnosis, aetiology and epidemiological research to prove that a certain characteristic of an environment or a human behaviour is pathogenic or a risk for health.

### 3. Health in Late Modernity

In the last few decades there can be observed considerable changes in societal processing of health. They possibly can and should be understood as manifestations of more general processes and changes in modernity. Following the understanding of modernity as the “project of modernity” (Habermas), modernity has to have a beginning and an end, and can be structured internally into historical phases. There is much speculation about the end of modernity, or even of history (Fukuyama), resulting in propositions of various post-isms: post-modernity (Lyotard), post-industrialism (Bell), post-work-society (Offe) to experience-society (Schulze), post-class-society to life-style society, post-capitalist to information- or knowledge-society, market-economy to market-society.

But how can we construct something like “late” modernity in a theoretical systems perspective? For sociological systems theory, the socially constitutive characteristic of modernity is the primacy of functional differentiation. And functional differentiation is associated with the rise and growth of various types of function system specific organizations, world-wide globalization of function systems and their organizations, and individualization of single human beings, integrated into society not by lifelong embedding to one multifunctional social unit, but by principal inclusion and actual decided participation in many different function-systems by taking complementary roles. All this also applies to late modernity. These distinctive modern tendencies rather are extended to regions and populations where they have not yet been present, and are intensified, where they already have existed in the past. That particularly holds true for economic transformations from agrarian to industrial to service-based modes of production, with corresponding processes of urbanization.

The period since the late 1980's is characterized by a specific intensification of globalization of information, capital, goods, services and workforce, so dramatically experienced by the people that the term and phenomenon is thought to be new, and not a process that has been occurring for many centuries already. This intensification is partly the result of political processes, the break-down of real socialism, the end of the cold war and of bipolar political situation. But it is

also supported by new or better technologies of transport, of (tele-) communication and data-processing, by digitalization and miniaturization of products, like computers, telephones etc. and the creation of the world wide web. Some of the health related changes associated with late modernity are: basic transformations of clinical medicine or care of ill health, a growing fitness and wellness industry, the rise of health promotion as an avant-garde of a new public health, to name only three. These changes, if judged as dramatic and sustainable enough, could justify a new kind of diagnosis for late modern society, the diagnosis of “health society” (cf. Kickbusch chap in this book) instead of a “medicalized society” for old modernity, competing with or substituting older diagnoses like “risk society” (Beck) or “information society” or “knowledge society” (Willke). Before we will look at health, we better get some basic understanding of some more trends and events that make late modernity different to “old” modernity.

As far as the dimension of **social differentiation** is concerned, the primary functional differentiation in the centres of a developing world society is intensified by further differentiation and specialization of function systems, already present in modern, and to a greater extent in more traditional nation states in the peripheries. By intensification and expansion of functional differentiation, further processes of **globalization** are made possible, since it is function systems and their organizations that can be globalized across national borders. Therefore, organization dominated society is also progressing. The same holds also true for **individualization**. Individualization is the result of the dissolution and reduction of functions of productive and reproductive households and communities for integrating individuals into society. Due to this phenomenon, these individuals are set free to be actively included and participate in different function systems, to take complementary roles in the specific organizations of these, as consumers, citizens and patients.

### *3.1. Health Care for Individuals in Late Modernity*

At least four different, partly complementary developments can be observed:

1. We can observe a **transformation of clinical medicine** from a profession predominantly curing ill health to a profession more and more of also improving positive physical health and quality of life for individuals. With that, medicine still remains oriented at the individual body and technical interventions into the structure and technical controls of processes of the functioning of the human body. What is expanded are the causes for interventions from diseases or the consequences of accidents to natural or socially defined deficiencies of optimal functioning or appearance of the body. So medicine develops around its disease-oriented core and expands to the periphery to address other aspects of human biology. Such areas include, reproductive medicine of fertility, fertility control and birth, via substitutive gendered medicines of aging (promising eternal youth) to palliative medicine of death; From changing unwanted primary sexual organs or orientations (medicine of sexual change), unwanted physical looks (beauty medicine), unsatisfying fitness

(sports medicine) and wellness, unwanted personal or social behaviours (e.g. over- or under-activity) (medicine of life-style drugs) to unsatisfying genetic structures, “new” medicine offers a lot more than just the curing of diseases.

This expansion of medicine can be interpreted as medicalization of life and living, i.e. making medicine responsible for diagnosing, treating and controlling a whole basket of life problems besides illness and disease. Medicalization partly can be based on pathologization, i.e. a pathogenic definition of or perspective on deficits or problems of the body, the psyche or social behaviour. Medicine’s expansion into services of improving quality of health and life is another factor of rising costs for health care which necessitates new and better definitions of the boundaries of public or solidarity funded systems of care of (ill) health. (Inclusion of viagra in health care schemes is a good example for that kind of challenge.)

2. **Economizing of care of ill health:** The demand for care of ill health is rising continuously for many reasons. Some of the most pronounced are: changing demographics of global population (aging and individualisation of households), epidemiology of morbidity (shift from infectious epidemics to greater burden of chronic diseases, accidents and new epidemics) as well increased opportunities for medical interventions (scientific and technological innovations and progress), leading to rising (public and/or private) expenditures for care of ill health. This has stimulated different measures for cost containment for cure and care. Some strategies are applied to make clinical care more effective and efficient by standardization like Evidence Based Medicine (EBM), Evidence Based Nursing (EBN), disease-management and different forms of quality management. Some introduce financial incentives like Diagnose Related Groups (DRGs) or co-payments for users to decrease the amount of usage of (higher quality levels of) care and duration of care. Another tendency is introducing market elements into national health service systems (e.g. purchaser-provider split in the UK) or more organisation into market systems (e.g. Health Maintenance Organisations (HMOs) in the USA). So the whole ill health care sector is not only continuously increasing its share of GNP, but it is in permanent reform as well. Partly care of ill health is changing from a professional service to an industry of ill health care, with medical doctors loosing influence on the system, and managers and shareholders gaining it. From (chronic) patients a more active and responsible, self-caring and co-productive role is expected, with more health-literacy to navigate and use the system effectively and efficiently. From the perspective of (poor) patients these economizing strategies also result in reducing inclusion in the system of care for ill health, and may lead to new forms of exclusion of specific groups of vulnerable individuals.

3. There seems to happen a further **differentiation of care for ill health** into three different and separate, but institutionally partly overlapping systems for physical ill health (medical care), mental ill health (psychotherapy) and social ill health (social work), which principally can be described by using Luhmann’s paradigm and concepts for function systems (cf. Table 6.6). Similarly there emerge, partly parallel, partly overlapping, function systems for developing **positive physical health** (sports and fitness training), positive mental health (meditation and wellness training) and social positive health (different forms of legal, economic and

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TABLE 6.6. Different function systems for physical, mental and ill health, in late modernity

Name	Care of ill physical health	Psychotherapy	Social work	
<b>Semantics</b>	<b>Code</b>	Presence/absence of physical ill health	Presence/absence of mental ill health	Presence/absence of social ill health (social problems)
	<b>Programs</b>	Modern clinical bio-medicine; complementary "old" medicines	Different (scientific) schools of psychotherapy, alternative/complementary	Different schools of social work
	<b>Medium of communication</b>	Codified knowledge of clinical medicine, specific diagnosis justifying specific therapies	Codified knowledge of psychotherapies and clinical psychology, specific mental diagnoses justifying specific communication therapies	Codified knowledge of social work, sociology, social psychology, specific diagnoses of social problems justifying specific social interventions; Partly money
	<b>Symbiotic mechanism</b>	Diagnostic & therapeutic techniques to intervene the individual body (invasive diagnostics, radiology, surgery (transplantation), pharmaceuticals, stem cells, genetic manipulation etc.)	Techniques of therapeutic communication	None
	<b>Theory of reflection</b>	Since the reflection value is the absence of a physical deviance/disturbance, not much of a reflection theory is necessary or possible. But: Evidence-Based-Medicine!	Since the reflection value is the absence of a mental deviance/disturbance, not much of a reflection theory is necessary or possible.	Since the reflection value is the absence of a social deviance/disturbance, not much of a reflection theory is necessary or possible.
<b>Structure</b>	<b>Function</b>	Treatment of (severe) ill health	Treatment of (severe) mental ill health	Treatment of (severe) social problems
	<b>Role relationship</b>	Doctor (health professional)/patient	Psychotherapist/mental patient	Social worker/client
	<b>Organization</b>	Hospital, ambulance, medical practice, nursing home etc.	Psychiatric hospital, psychotherapeutic practice/ambulance	Different organisations of social work

TABLE 6.7. Different function systems for physical, mental and social positive health, in late modernity

Name	Physical fitness	Mental wellness	Social wealth	
<b>Semantics</b>	<b>Code</b>	Suboptimal/optimal individual positive physical health	Suboptimal/optimal individual positive mental health	Suboptimal/optimal individual social wealth
	<b>Programs</b>	Of sports, gymnastics, physical fitness, rehabilitation	Health psychology. Health education, alternative/complementary spiritual cultural systems	Different forms of consultancy, coaching
	<b>Medium of communication</b>	Codified knowledge of biology, sports sciences etc. allowing for diagnosis of potentials and justifying specific treatment interventions	Codified knowledge of psychology, religious and spiritual systems	Codified knowledge for diagnosis of potentials & solutions of improving different aspects of social status
	<b>Symbiotic mechanism Theory of reflection</b>	Techniques of training the body, anabolica etc. Since the reflection value is optimal physical health, a reflection theory at least has to specify meaning and benchmarks for that.	Techniques of meditation Since the reflection value is optimal mental health, a reflection theory at least has to specify meaning and benchmarks for that.	None Since the reflection value is optimal social health, a reflection theory at least has to specify meaning and benchmarks for that.
<b>Structure</b>	<b>Function</b>	Specific support for development of individual physical fitness and wellness	Specific support for development of individual positive mental fitness and wellness	Specific support for development of individual social resources (economic & social capital)
	<b>Role relationship</b>	Physical trainer (physiotherapist)/client	Mental trainer/client	Consultant/client
	<b>Organization</b>	Different organisations, (e.g. fitness-, sports-, rehabilitation-centers) providing infrastructures & services	Different organisations offering services for developing mental wellness	Different organisations of consultancy

social consultancy and coaching). These also principally can be described by using Luhmann's paradigm and concepts for function systems (cf. Table 6.7).

4. The growing importance of **health** as a point of secondary reference in **other function systems**, health related policies in politics, health related products, services and organizational policies in economics, health related information in the mass media, health related contents in education. On the part of individuals this corresponds to a growing amount of health related information seeking, communication and decision making in everyday life.

### 3.2. *New Public Health in Late Modernity*

For the transformation of old public health into some kind of new public health, the health promotion movement as an avant-garde within and outside public health was decisive. By definition, the notion of public health does relate to the health of populations on the one hand, and to collective actors responsible for or in a position to assure and improve health of these populations on the other. Historically, these collective actors responsible for population health have been cities in the first place, and later, with the rise of modernity, primarily (nation) states. In late modernity the types and number of collective actors in a position to care for public health policies have increased. After World War 2 a new global or world level has been created by the formation of the United Nations, with World Health Organisation (WHO) as a specific subunit responsible for matters of health. Later, also other supranational agencies, like the World Bank, Food and Agriculture Organisation of the United Nations (FAO) and others have engaged themselves in public health programs on a global level. So a global public health discourse has been established, supported by “Global Health Reports”, “The Millennium Goals for Global Health”, and specific inter- or trans-national projects. WHO also engages in international initiatives to systematically improve public health on a national (WHO 1999) or regional level such as the Healthy Cities or Healthy Regions Initiatives. It is through these types of programs that the importance of the collective local level for public health has been strengthened. But following the Ottawa Charter (WHO 1986), WHO did not only focus on region based communities and their (local) capacity to work in public health, but also underlined the relevance of sector or function specific organisations, like schools, universities, prisons, workplaces and hospitals that also affect public health. It is because of this that the WHO started specific health promotion oriented networks for these types of organisations. Only health promotion in the workplace could build upon a public health tradition, dating back to at least to the 19<sup>th</sup> century, whilst other settings more or less have been identified as new partners for health.

In summary, **one** typically late modern ongoing tendency is the diversification and spread of responsible collective actors or settings. A **second** is the widening of attention from mainly fighting pathogenic risk-factors to also building up and strengthening salutogenic resources for health. A **third** is a widening of attention to include besides factors in the environment affecting health also behavioural factors such as individual styles of life and work. This tendency is a reaction to ongoing individualism and to changing risks and choices. To influence population behaviour as methods health education and specific public campaigns relating to specific health issues are being used. A **fourth** change also reacted on changes in epidemiology towards more chronic diseases and also increasing individualisation of a better educated and more autonomous populations, by transforming more expert dominated solutions into more participatory kinds of problem solving, stressing enablement, empowerment and generating of health literacy for dealing with health problems, to allow users for shared decision making, co-production in cure and care and self-responsible healthy life-styles.

By these transformations, public health began to adapt itself to more general fundamental changes, like increasing globalization, individualization, “society of organisations” and to relative affluence. But the challenge of health promotion and a new public health only partially has been taken up and integrated into (this) old concept of public health. Partly, a separate process of institutionalization of health promotion, outside of the realm of public health, has been explored, with more or less success.

But compared to individual oriented types of societal processing of health, which have become more differentiated and varied, more evidence-based and standardized as well, with an even greater growth in late modernity, population oriented public health approaches have not gained adequate momentum. Population health and even more so a health promoting environment intrinsically has the quality of a public good and has to be promoted through joint and participatory political decision making, action and investment. In forming a global society with strong neo-liberal tendencies, with weakening of national welfare states, especially, coupled with the strengthening of market economy, towards some kind of “market society”, the chances for investments into and growth of new or old public health are not particular promising.

#### 4. Closing Comments

Sociological systems theory has been used to reconstruct the societal processing of health in modernity and late modernity. Its paradigm and concepts allow for a systematic analysis of specific characteristic, structures and semantics of modern societies and their consequences for social processing of health. The systems theory was also helpful in describing and interpreting actual tendencies and characteristics of late modern society, triggering new forms of health related phenomena. Varying emergent practices have been analyzed, specifically addressing the medical care of ill health and public health, with health promotion as an avant-garde or reform movement of a New Public Health paradigm. However, sociological system theory has been used more to reconstruct the different emerging systems of health related practices in (late) modernity, than to introduce the use of sociological systems theory *in* these health advancement practices. The latter could be seen as a potential to improve the effectiveness and efficiency of the professional practice of public health and health promotion, but this has to be left for another publication.

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