QUALITY-OF-LIFE IN TECHNOLOGICAL SOCIETY[1]

Ruut Veenhoven[1]

In: Phillip Brey., Adam Briggle and Edward Spence (Eds.) 'The Good Life in a Technological Age', Routledge, New York, Series Studies in Science Technology and Society, Chapter 3, pp 55-76, ISBN 978-0-415-89126-4 (hbk), 987-0-203-12458-1 (ekb)

ABSTRACT
Effects of technology on the quality of human life can be assessed by comparing quality of life in more and in less modern societies. The quality of life in a society can be measured by how long and happy its inhabitants live. Using these indicators I start with a cross-sectional analysis of 140 nations around 2005 and find that people live longer and happier in today's most modern societies. Secondly I examine trends in 10 modern nations over the last 35 years and find that happiness and longevity have increased in most cases. Thirdly I consider the long-term and review findings from historical anthropology, which show that we lived better in the early hunter-gatherer society than in the later agrarian society and that quality of life increased markedly in industrial society. Together these data suggest that technological development has worked out differently for the quality of human life, first negatively, in the change from a hunter-gatherer existence to agriculture, and next positively, in the more recent transformation from an agrarian to an industrial society. We live now longer and happier than ever before.

1 INTRODUCTION

The human species has lived for most of its time in simple hunter-gatherer societies. Agrarian societies developed less than 5.000 years ago and it is only in the last 200 years that a 'modern' industrial society has come into being. Today this industrial society is rapidly transforming into a global information society. Technology is a driving force in societal evolution and is highly intertwined with wider modernization (Lensky et al 1995).

1.1 The issue

Is this development a change for the better? There has always been much controversy over this question, and currently the dispute seems more intense than ever, possibly for the reason that we are more aware today that society is of our making and because social change is taking place at an ever increasing rate. Progress optimists believe that we live better now than earlier generations, while pessimists argue that life is getting worse. Technology is an important issue in this discussion.

The positive view

The idea that life is getting better draws on several achievements of modern technological society. One is the unprecedented rise in the material standard of living; the average citizen lives more comfortably now than kings did a few centuries ago. Mechanical technology is seen as a main source of these benefits. Another improvement that strikes the eye is that the chance of an untimely death is greatly reduced; ever fewer people die in epidemics. Medical technology is credited for much of that advance. Moreover a number of social evils have been

[1] Erasmus University Rotterdam in the Netherlands and North-West University in South Africa
e-mail: Veenhoven@fsw.eur.nl

abated, such as poverty, inequality, ignorance and oppression. This social progress is seen to result both from unintended consequences of technological development and from deliberate social engineering, using newly developed 'social' technology.

A recent statement of this positive view can be found in 'It's getting better all the time' by Moore and Simon (2000). This notion of improvement is typically part of an evolutionary view, in which society is seen as a human tool that is gradually perfected. This idea developed during the period of Enlightenment in the 18th century and lives today. The idea that life is getting better breaks with the traditional religious view of earthly life as a phase of penance awaiting paradise in the afterlife. It is deemed possible to reduce suffering by creating a better world and societal development is seen to head in that way, be it with some ups and downs.

The negative view

The view that life is getting worse is typically fuelled by concern about new developments. Mechanical technology is seen to drive out traditional craftsmanship and to have 'degraded' work (e.g. Braverman 1984) and specialization and bureaucratization are believed to cause widespread 'alienation' (e.g. Marx 1871). Technological development is also seen to involve ever-greater risks, which reflects in a widespread sense of insecurity (e.g. Beck 1992).

Related social developments are seen to undermine the quality of life as well. Many sociologists see increasing loneliness and feelings of meaninglessness in modern society, e.g. Riesman (1950) in "Lonely crowd', Ritzer (1993) in "The McDonaldization of society" and Putnam (2000) in "Bowling alone". In psychology, Freud (1930) provides an outspoken example of the theory that life is getting worse. In his 1923 book "Unbehagen in der Kultur" (Society and its Discontents) Freud asserts that any social organization requires the repression of instinctual urges, and that the development of modern society necessitates ever more repression of natural impulses. Hence he believed that societal civilization is antithetical to human happiness and that we are typically less happy than our primitive forefathers.

A recent statement of this view can be found in: 'The progress paradox: How life gets better while people feel worse' by Easterbrook (2003). This notion of decay is often part of the idea of society drifting away from human nature, because society has changed a lot, while human nature has not (e.g. Nesse 2004:1343). In this view society is not a piece of equipment, but rather an uncontrollable force that presses humans into a way of life that does not really fit them. The notion of decay fits also with the supposition that there is great wisdom and morality in tradition, which modernization destroys. The idea that life is getting worse fits a long tradition of social criticism and apocalyptic prophecies. In this view, paradise is lost and is unlikely to be restored.

Dominance of the negative view

The negative view prevails in most discussions and, in particular, in social scientific discourse. Sociologists have become even more negative about modern society over the last decade, an analysis of the Sociological Abstracts showed a doubling in the use of gloomy words between 1970 and 2000 (Elchardus 2004: 507).

The negative view has also gained the upper hand in public opinion. Survey studies in modern nations show wide support for the idea that life was better in the 'good old days'. In the USA the majority agrees with the statement "In spite of what some people say, the lot of the average man is getting worse, not better". Support for this idea is growing, the percent affirmative answers rose from about 55% in the 1970s to 70% in the early 1990s. Curiously, this idea is not reflected in self-reports of an individual's own life, since most people feel that the quality of their personal life has improved (Hagerty 2003).

1.2 Approach

There is some plausibility in both these views, and possibly all the effects mentioned exist to some extend. Yet it is often impossible to assess the relative strength of these effects and especially difficult to grasp their interactions and variations over time and place. For that reason we will never be able to settle this debate on the details. What we can do is assess the balance of effects of technological development on the final quality of human life. When people live better in low-tech conditions than in high-tech conditions, the negative effects apparently outweigh the positive ones; other things being equal. In that line, this chapter compares quality-of-life in more and less developed societies, both across nations and over time. An advantage of this approach is that it includes all the consequences of all technologies. A disadvantage is that it may also capture effects of societal modernization that are independent of technology.

2 MEASUREMENT OF QUALITY-OF-LIFE IN NATIONS

How can we assess quality-of-life in society? This first requires a clear definition of quality-of-life and next a feasible way of measurement.

2.1 Concepts of 'quality of life'

The term 'quality-of-life' serves as a catchword for different notions of the good life. It is used in fact to denote a bunch of quali*ties* of life, which can be ordered on the basis of the following two distinctions. A first distinction is between *opportunities* for a good life and the *outcomes* of life. This distinction is quite common in the field of public-health research. Pre-conditions for good health, such as adequate nutrition and professional care are seldom mixed up with the concept of health. A second difference is between *external* and *inner* qualities. In the first case the quality is in the environment, in the latter it is in the individual. This distinction is also quite common in public health. External pathogens are distinguished from inner afflictions. Combining of these two dichotomies yields a fourfold matrix, presented in scheme 1.

Scheme 1 about here

In the upper half of the scheme, we see, next to the outer opportunities in one's environment, the inner capacities required to exploit these. The environmental conditions can be denoted by the term *livability*, the personal capacities with the word *life-ability*. This difference is not new. In sociology, the distinction between 'social capital' and 'psychological capital' is sometimes used in this context, and in the psychology of stress the difference is labeled negatively in terms of 'burden' and 'bearing power'.

The lower half of the scheme is about the quality of life with respect to its outcomes. These outcomes can be judged by their value for one's environment and by their value for oneself. The external worth of a life is denoted by the term *utility of life*. The inner valuation of a life is called *appreciation of life*. These matters are of course related. Knowing that one’s life is useful will typically add to ones appreciation of life. Yet useful-lives are not always happy lives and not every ‘good-for-nothing’ is unhappy.

Livability of the environment

The left top quadrant denotes the meaning of good living conditions, which I call 'livability'. One could also speak of the 'habitability' of an environment, though that term is also used for

the quality of housing in particular. Elsewhere I have explored the concept of livability in more detail (Veenhoven 1996:7-9).

Ecologists see livability in the natural environment and describe it in terms of pollution, global warming and degradation of nature. Currently, they associate livability typically with environmental preservation. City planners see livability in the built environment and associate it with sewer systems, traffic jams and ghettos. Here the good life is seen to be the fruit of human intervention. In public health this all is referred to as a 'sane' environment. Society is central in the sociological view. Firstly, livability is associated with the quality of society as a whole. Classic concepts of the 'good society' stress material welfare and social equality, sometimes equating the concept more or less with the welfare state. Current communitarian notions emphasize close networks, strong norms and active voluntary associations. The reverse of this livability concept is 'social fragmentation'.

Life-ability of the person

The right top quadrant denotes inner life-chances. That is: how well we are equipped to cope with the problems of life. I call this 'life-ability', which contrasts elegantly with 'livability'. This quality is central in the 'capability approach', in particular in Nussbaum's (2000) variant. Elsewhere I have discussed that approach in more detail (Veenhoven 2010).

The most common depiction of this quality of life is an absence of functional defects. This is 'health' in the limited sense, sometimes referred to as 'negative health'. In this context, doctors focus on unimpaired functioning of the body, while psychologists stress the absence of mental defects. This use of words presupposes a 'normal' level of functioning. A good quality of life is seen to be the body and mind working as designed. This is the common meaning used in curative care.

Next to absence of disease, one can consider excellence of function. This is referred to as 'positive health' and associated with energy and resilience. Psychological concepts of positive mental health also involve autonomy, reality control, creativity and inner synergy of traits and strivings. This broader definition is the favorite of the training professions and is central to the 'positive psychology' movement.

Utility of life

The left bottom quadrant represents the notion that a good life must be good for something more than itself. I refer to these external turnouts as the 'utility' of life. When evaluating the external effects of a life, one can consider its functionality for the environment. In this context, doctors stress how essential a patient's life is to their intimates. At a higher level, quality of life is seen as a contribution to society. Historians see quality in the additions an individual can make to human culture, and rate for example the lives of great inventors higher than those of anonymous peasants. Moralists see quality in the preservation of the moral order, and would deem the life of a saint to be better than that of a sinner. In this vein, the quality of a life is also linked to effects on the ecosystem. Ecologists see more quality in a life lived in a 'sustainable' manner than in the life of a polluter.

Enjoyment of life

Finally, the bottom right quadrant represents the inner outcomes of life. That is the quality of life in the eye of the beholder. As we deal with conscious humans, this quality boils down to subjective appreciation of life. This is commonly referred to by terms such as 'subjective wellbeing', 'life-satisfaction' and 'happiness' in a limited sense of the word.

Humans are capable of evaluating their life in different ways. We have, in common with all higher animals, an ability to appraise our situation affectively. We feel good or bad about particular things and our mood level signals overall adaptation. As in animals these

affective appraisals are automatic, but unlike other animals humans can reflect on this experience. We have an idea of how we have felt over the last year, while a cat does not. Humans can also judge life cognitively by comparing life as it is with notions of how it should be.

Happiness can be defined as the degree to which a person evaluates the overall quality of his or her present life-as-a-whole positively. In other words, how much the person likes the life he/she leads. This evaluation appears to draw on affective information in the first place, if people appraise how happy there *are*, they estimate how well they *feel* most of the time (Veenhoven 2009e).

Analogous concepts in biology

In evolutionary biology, external living conditions are referred to as the 'biotope' or 'habitat'. A biotope can be a more or less suitable for a species, depending on e.g. availability of food, shelter and competition. This is analogous to what I call 'livability'. An organism's capability to survive in the environment is called 'fitness' by biologists. This latter term acknowledges the fact that the capabilities must meet (fit) environmental demand. This is equivalent to what I call 'life-ability'. With respect to outcomes of life biologists also distinguish between external and internal effects. External effects are various ecological functions, such as being prey for other creatures, and the continuation of the species. This is analogous to what I call the 'utility' of life. The outcome of life for the organism itself is depicted as 'survival', which is seen to result from the fit between capabilities and environment. This notion corresponds to what I call 'enjoyment of life'. As we will see below, this is more than mere correspondence, because subjective enjoyment is also a result of fit between individual abilities and environmental demands.

Scheme 2 about here

2.2 Measuring quality of life

Quality-of-life in nations is usually measured using indexes that involve indicators from each of the quadrants in scheme 1, for instance the Human Development Index (UNDP 1990) includes income per head (top left), education (top right) and life expectancy (bottom right). Yet this makes no sense and the schemes help us to see why not.

Comprehensive measurement not possible

Quality-of-life cannot be measured by totaling quadrants. There is no point in combining the qualities in the upper and the lower half of the scheme, since this involves the adding of chances and outcomes. Combining the qualities at the left and the right makes little sense either and in particular not in the case of life chances, where it is not the *sum* that matters, but rather the *fit* between external conditions and inner capacities.

Still another problem is that three of these four qualities cannot be measured very well. We can only make guesses about the features that constitute the livability of an environment and it is also quite difficult to establish what abilities are most required. Though it is clear that some necessities must be met, it is not so clear what is required on top of these, and in what quantities and in what mix. Measuring the utility of life is not really feasible either, since external effects are quite diverse and often difficult to assess. Due to this lack of sound scientific criteria, any measurements depend very much on assumption and ideology and hence there is little agreement how to measure these qualities of life.

Measuring happiness is less problematic however. Since happiness is an overall judgment of life, we cease to have the problem of trying to add and compare apples and oranges: as happiness is a state of mind for an individual we can assess it rather easily by

asking that person how happy he or she feels.

Most inclusive measure is how long and happy people live

In biology, 'survival' is assumed to result from the 'fit' between the abilities of the organism and environmental demands. This fit cannot be observed as such, but is typically inferred from survival rates. If an organism perishes before its programmed lifetime, there is apparently something wrong with this chance constellation.

In this line we can also infer the life chances in a human society from the outcomes in happiness. If people live happily, their environment is apparently sufficiently livable and their abilities appropriate. This may not appeal to supporters of the theory that happiness is a culturally constructed illusion, but it fits well with the view that happiness is a biological signal of how well we thrive.

In simple animals, good adaptation reflects only in survival, in higher animals, good adaptation also reflects in hedonic experience. Negative affect is indicative of poor adaptation and tends to inhibit the organism, while positive affect is indicative of good adaptation and works as a 'go' signal (Frederickson 1998, Nesse 2004). So, an animal that does not feel good is probably not doing well. This inner experience is no great issue in biology, because we cannot assess how animals feel. Still there is ground to see hedonic experience as an additional manifestation of good adaptation and in this vein one could argue that an animal that feels well most of its lifetime seems to be better adapted than an animal that lives equally long but feels less well.

Humans are capable of reflecting on their experiences, and can condense positive and negative affects into an overall appraisal of happiness. They are also capable of communicating that appraisal to investigators. Hence in the case of humans we can use the additional sign of good adaptation and assess how long *and* happy they live.

The degree to which people live long and happy is denoted in the right bottom quadrant in scheme 1 and is the most inclusive measure of outcomes of life for the individual. It is also indicative for the qualities denoted by the two top quadrants. If people live long and happy, their environment is apparently sufficiently livable and their life-abilities adequate enough. So, this measure covers in fact three of the four quadrants and is therefore the most comprehensive measure of quality-of-life available.

Fairy tales often end with the phrase "and they lived long and happily ever after", which is to say that the characters of the story had a good life. The concept of quality of life is then operationalized as a 'long and happy life'. The reasoning above shows that this makes sense. I have underpinned this position in more detail elsewhere and distinguished this measure of 'apparent' quality-of-life from currents counts of 'presumed' blessing (Veenhoven 1996, 2000a).

Also the most relevant in this context

This paper is about the question of whether life is getting better in technological society. As such it concerns the actual outcomes of life and not assumed chances for a good life. What we want to know is how modern chance constellations work out on the final results of life. Likewise, the question is not about the outcomes for society, but about the outcomes for individuals. If we do not keep these matters apart, societal development is easily equated with a better life. So this is another reason to focus on the right bottom quadrant, which is best measured by how long and happy people live.

2.3 Measure of happy life years

The degree to which people live long and happy in a society can be measured by combining two sources of information: average longevity in the country and average happiness.

Measurement of longevity in nations
How long people live in a country can be assessed using civil registration and by assessing the average number of years between birth and death. This will give an adequate measure for past generations, but not those still alive. Hence, a next step is to estimate how long the living remains alive and these estimates can be generalized to give a general population average. This estimate is called 'life expectancy' and is commonly used in world health statistics. Data is available for almost all countries in the world and yearly updates are published in the Human Development Reports (UNDP 2009).

Measurement of happiness in nations
Happiness has been defined as something that we have in mind. Consequently, happiness can be measured using single direct questions. A common survey question is:

Taking all together, how satisfied or dissatisfied are you currently with your life as a whole?

	1	2	3	4	5	6	7	8	9	10	
Dissatisfied											Satisfied

Since the 1970's, such questions have been included in many surveys worldwide and there is now a growing body of data on happiness in nations. Presently there are comparable surveys in 90 nations. The data have been brought together in the 'World Database of Happiness' (Veenhoven 2009a).

There are many qualms about such simple self-reports of happiness, in particular about their validity and about comparability across nations. Elsewhere I have considered the objections and inspected the empirical evidence for claims about bias (Veenhoven, 1993, 1997). I found no proof for any of the objections, so I assume that happiness can be measured in this way. Others have come to the same conclusion (Diener 1994, Saris 1998). Suffice to note that cross-national differences in happiness correspond in the predicted way with national rates of depression (VanHemert 2002), and suicide (r =-.46; own analysis).

Combination with longevity
How long and happy people live in a country can be measured by combining information about length of life, drawn from civil registrations of births and deaths, with data on average appreciation of life as assessed in surveys. The following simple formula can be applied:

Happy-Life-Years = Life-expectancy at birth x 0-1 happiness

Suppose that life expectancy in a country is 60 years, and that the average score on a 0 to 10-step happiness scale is 5. Converted to a 0-1 scale, the happiness score is than 0,5. The product of 60 and 0,5 is 30. So the number of happy life years is 30 in that country. If life expectancy is also 60 years but average happiness 8, the number of happy life years is 48 (60 x 0,8).

Theoretically, this indicator has a broad variation. The number of Happy Life Years is zero if nobody can live in the country, and will be endless if society is ideal and/or its inhabitants immortal. The practical range is between about 10 and 70 years. Presently at least, life expectancy at birth in nations varies between 40 and 80 years, while average happiness varies between 0,3 and 0,8. The number of Happy-Life-Years (HLY) will always be lower

than standard life expectancy. It can equal real length of life only if everybody is perfectly happy in a country (score 1 on scale 0 to 1).

A high HLY means that citizens live both long and happily; a low HLY implies that the life of the average citizen is short and miserable. Medium HLY values can mean three things: 1) both moderate length-of-life and moderate appreciation-of-life, 2) long but unhappy life, and 3) short but happy life. I treat these intermediate outcomes as equal, but one can of course prefer one to the other.

I have described this indicator in more detail elsewhere (Veenhoven 1996, 2000a, 2009b). It scored highest in a scholarly review of social indicators (Hagerty et. al. 2001). In a similar way the World Health Organization measures 'Disability Adjusted Life Years' (DALYs) in nations (WHO 2004). In this case, life expectancy is weighted with a disability score, which is typically also derived from survey data. Because disabilities increase with age, age composition in nations must be taken into account in cross-national comparisons of DALY's. In the case of HLY this is not required, because happiness is not related to age in the same way. There is a slight U-shaped pattern in the relation between happiness and age, happiness tending to be somewhat lower around middle age, yet this effect is not so robust that it requires correction.

3 QUALITY OF LIFE IN MODERN SOCIETY

Using this indicator, we can now answer the question whether life is getting better or worse in modern technological society. For this purpose I will first compare the quality-of-life across contemporary nations and next consider the available data on trends over the last decades.

3.1 Difference between more and less developed nations

The present day world counts about 180 nations and for 144 of these we know how long and how happy its citizens lived in the 1990s. See the list on the World Database of Happiness (Veenhoven 2009b). These cases represent about 90% of the world's population, since all the big countries are included.

The level of technological development of these nations can be measured in different ways. One way is to assess the number is Internet users per 1000 inhabitants. Another way is assessing the degree of industrialization, which is commonly measured by its reverse that is the share of agriculture in the national income. The level of education is also indicative of technological development, as is the degree of urbanization. All measures of technological development are highly correlated with economic development.

In the scattergram of scheme 3, the number of happy life years is plotted vertically and Internet connections horizontally. One can easily see that there is a strong positive correlation, HLY being systematically higher in nations with the highest Internet penetration. The correlation is +.73. Reversely, there is an equally strong negative correlation with the share of agriculture in the national income (r = -.74), which indicates technological underdevelopment. Likewise, there is a strong positive correlation with education (r = +.70) and urbanization (r = +.69). The correlation with economic development is again positive (r = +70).

The pattern is similar if we consider happiness and longevity separately. The correlation of technological development as measured with Internet penetration and happiness is +.63 and the correlation with life-expectancy +.66. These effects are largely independent; controlling for life expectancy, the partial correlation with happiness is still +.32 and controlling for happiness, the partial correlation of Internet penetration with life expectancy is +.45! This independence of the effects is another justification for the use of this combined

measure of happy life years.

The data used in this analysis are described on Appendix A

Scheme 3 about here

3.2 Trend modern nations over the last decades

The differences observed in the cross-sectional analysis above could be due to intervening variables, for example they may be due to the fact that modern nations are mainly found in moderate climate zones or to variation in genetic endowment. Such distortions can be controlled for if we compare over time within separate nations. If life is getting better, this must also manifest in a positive trend.

Assessment of the development in HLYs in nations requires trend data on happiness and life expectancy. In the case of life expectancy this is no problem, since considerable time series are available for many nations. Time series on happiness are less abundant however. Series of thirty years or longer and based on identical survey questions are available for only 10 nations and these are all highly developed ones.

Eight of these nations are the early EU members, which have participated in the Eurobarometer survey since 1973. These nations are Denmark, Belgium, France, West Germany, Italy, Luxembourg, The Netherlands and the UK. Scheme 4 presents the trend in HLYs in these countries from 1973 to 2008. A clear positive trend emerges; Europeans gained 4,6 more happy life years in this 35-year period. See Scheme 4.

Scheme 4 about here

If this trend continues, West-Europeans will live 62,2 happy years in 2073, which would mean a gain of 15,7 years in less than a century. Similar trends are observed in the other developed nations for which data are available. HLY rose 5 years in Japan and 6,4 years in the USA (Veenhoven 2009c).

This upward trend is not the result of the happy getting happier, but rather the result of a reduction in the number of very unhappy persons in the population. This manifests in a lowering of the standard deviations in all nations, also in the ones where the average remained at the same level (Veenhoven 2005). Likewise, the gains in life expectancy are greater at the bottom of the distribution than at the top. So the rise in HLY went together with a reduction of inequality in quality of life.

This is not to say that life has got better in all countries during the last decades, HLY has not risen in Belgium, due to a decline in happiness in the 1980s. Happiness and longevity dramatically plunged in the former communist countries in the 1990s, in particular in Russia (Veenhoven 2001), probably in response to the sudden transformations in these societies. The latest data suggest that the post-communist nadir is passed. One must also realize that the effects of economic development are less smooth than suggested in scheme 3. In some cases at least, early industrialization was accompanied by a shortening of life and even by a reduction in average body size (Komlos 1998). The wide variation in the left half of scheme 3 can be interpreted as an indication that similar things are happening in today's developing nations. Further it is beyond doubt that progress causes the ‘pain of incomprehension’ during periods of transition (Hays, 1994).

4 QUALITY-OF-LIFE OVER HUMAN HISTORY

The above evidence concerns contemporary societies and does not rule out that quality-of-life has been better in earlier times. All the cases considered are modern to some extent. Hence these data cannot settle the question of whether we would have lived better in an ancient pre-technological society.

One way to check this would be to look at the quality-of-life in present day 'primitive' societies. Yet there are few such societies today and the few that remain live typically live in poor ecological conditions. Moreover, the last century's anthropological research does not give us a clear picture of the quality-of-life in the primitive societies that were surveyed. There are accounts of positive features in such societies, such as Mead's (1953) description of relaxed sexual practices in Samoa, but there is also evidence of rampant evils, such as violence and superstition (Edgerton 1992). Anthropologists have never attempted to assess happiness, possibly because of their belief in cultural relativism.

Still, we find important clues in historical anthropology and in particular in work by Maryanski and Turner (1992) and by Sanderson (1995). This literature departs from the insight that the human species developed in the context of hunter-gatherer bands and that this type of social organization prevailed for most of the 100.000 years that Homo sapiens has existed. More complex kinds of societies seem to have developed only fairly recently in human history, first horticultural societies, then agrarian societies and finally our present day industrial society, which is rapidly becoming post-industrial in the west (Lenski et. al. 1995, chapter 1). There are good indications that these types of societies were not equally livable, and in particular that the agrarian phase marked a historic dip in human quality-of-life.

4.1 Less free in agrarian society

One indication is that the development of freedom seems to have followed a U- curve over human history. Hunter-gatherer societies can impose few constraints on their members, since dissenters can support themselves for a while and join other bands. Accumulation of wealth and power is difficult, if not impossible, in these conditions and hence this kind of society tends to be free and egalitarian.

This changes profoundly in an agrarian society, where survival requires control of the land and people became more dependent on their family and vulnerable to exploitation by a warrior caste. According to Maryanski and Turner (1992) this drove mankind into the 'social cage' of collectivistic society. In their view, such strong social bonds are less required in the context of industrial existence, not only because individuals get access to more relational alternatives, but also because the ongoing division of labor involves a shift of dependencies to anonymous institutions such as the state. Durkheim (1897) described that latter phenomenon as the change from 'mechanic solidarity' to 'organic solidarity'.

This theory fits the above observation that people live happier in the most modern societies of this time and in particular it fits the observed relation between happiness and freedom in nations (Veenhoven 1999). It also provides an explanation for the ongoing migration from the land to cities.

4.2 Less healthy in agrarian society

Another sign of the low quality-of-life in agrarian society can be found in anthropometric indicators of health. The average health of past generations can to some extend be reconstructed from human remains. On the basis of excavated bones and teeth we can estimate how long people have lived and to some degree how healthy they were when they lived.

Research along these lines suggests that people lived about equally long in early hunter-gatherer societies and later agrarian societies, but that they lived more healthily in the former than in the latter. Hunter-gatherers appear to have been better-nourished and less

disease ridden than historical agrarian populations and they seem to have been less burdened with work. Much of the literature on this subject is reviewed in Sanderson (1995: 340-3). Apparently, the obvious advantages of a sedentary pastoral life are counter balanced in some way, amongst other things probably by increased exposure to disease and to social stress. Present day industrial societies score better on anthropometric indicators than both of the other types do. We live longer and healthier than ever before. We also grow taller than our forefathers ever did.

Such historical data cover health and longevity and can be combined in an index of healthy life years that concurs with the measure of 'Disability Adjusted Life Years' that is currently used by the World Health Organization (WHO 2004). This resembles the 'Happy Life Years' I used in the above analysis of contemporary nations, but it is not quite the same. Since survey research is a recent invention we will probably never know how happy people were in the past. Hence we must make do with the available data on health and longevity. Still, these matters appear to be strongly correlated with happiness and both can be seen as manifestations of human thriving.

If we consider the data on longevity it is also easy to see that our forefathers cannot have lived as many happy years as we do now. The average length of life was about 45, both in a hunter-gatherer society and in an agrarian society. This means that the HLY could not be higher than 45**,** even if everybody was perfectly happy. This is clearly below the level in present day modern nations, where HLY varies between 50 and 60 (cf. scheme 3).

4.3 Long term pattern

Together these data suggest that societal evolution has worked out differently on the quality of human life, first negatively in the change from hunter-gatherer existence to agriculture and next positively in the recent transformation from an agrarian to an industrial society. This pattern is depicted graphically in scheme 5.

It is not unlikely that the upward trend will continue in the future, both happiness and longevity are likely to rise. Currently average happiness ranges between 3,2 (Tanzania) and 8,4 (Denmark). This means that there is still much to win. There is no reason to assume that Tanzania can never reach the level of Switzerland. Possibly, average happiness can even go above an average of 8,5. The maximally possible average may be close to 9. An average of 10 in a nation is clearly not possible, not only because human life involves inevitable suffering but also because no society can serve everybody's needs equally well.

It is also quite likely that longevity will continue to rise. The underdeveloped nations are catching up at an unprecedented rate, and there is reason to expect that longevity will further extend in the developed world, among other things as the result of medical technology. There is speculation that the average life might be extended to 100 years or more (Manton 1991, Vaupel & Lundström 1993). For the time being at least, gains in length of life have not come at the cost of quality of life. Elderly people are slightly happier than the middle-aged. The dotted trend line at the right side of scheme 5 depicts these projections.

Scheme 5 about here

5 DISCUSSION

These findings raise several questions: one is about compatibility with claims to the contrary and in particular with reports of alarming rises in rates of depression in modern society. A second question is about the mechanisms behind the recent rise in the quality of human life and the role of technology in that context.

5.1 Claims to the contrary

As noted in the introduction, several social scientists believe that life is getting worse in modern society and much of these claims are summarized in Easterbrook's (2003) '*Progress paradox'*. It would lead too far to discuss all misery counts. Below I will consider two claims.

Easterlin paradox

Income per capita has risen spectacularly in western nations over the last 50 years, but according to Richard Easterlin (1974, 1995, 2005) this has not made us any happier, average happiness remaining stagnant. This claim may apply to some countries, among which the USA. Yet happiness is rising in most countries of the world (Veenhoven & Hagerty 2006). Possibly, an otherwise positive effect of economic and technical development was counterbalanced by different things, such as dwindling incomes in the middle class (Fischer 2007). Even if average happiness has remained the same, longevity has increased. Given the high level of happiness this has resulted in a substantial increase in happy life years.

Depression epidemic

Mental illness is no exception in modern societies, about 16% of the US citizens have experienced episodes of serious depression and every year depression interferes with effective functioning of some 6% of them for two weeks or more (Kessler. et. al. 2003). There are signs of increasing rates of depression, especially among youth and there is talk about a depression epidemic (Seligman 1990: 10). How does this fit with a rising number of happy life years? The first thing to note is that depression is strongly correlated with happiness. Depressed individuals are clearly less happy and there is a strong correlation between rates of depression and average happiness in nations (VanHemert 2002). A second point to keep in mind is that depression is temporary in most cases, and good times can balance the bad times. Thirdly, we are not sure that the rate of depression has risen. There is an increase in the numbers for people diagnosed as being depressed, but this may due to better recognition by professionals of the signs of depression and by better treatments being available to treat depression. It is possible that depression is less well recognized in under developed nations, not only because the people are less aware of the syndrome, but also because bad feelings can be more easily attributed to bad conditions. However it is also possible that in modern societies people are more aware of how they feel, because they have more choice and use how they feel more to help them to assess what they want. If there is a real rise in rates of depression in modern society, that can still co-exist with a rise in average happiness. Modernization can be to the advantage of a majority, but can come at the expense of a minority who are pushed into depression; no society can suit the needs of all equally well. If this has happened at all, it has not resulted in a split between happy and unhappy, since the dispersion of happiness is lessening in modern societies (Veenhoven 2005).

5.2 Why is life getting better?

The observed growth of years lived happily can be attributed to several factors. One is obviously that several common evils of the past have been overcome in modern societies or at least much abated. For instance, few in the West die of hunger anymore and the chance of untimely death is greatly reduced. Technology has evidently contributed to that development. A second factor is in the increased freedom in modern individualized society. The social system allows us more opportunity to choose and we have also become more capable of making choices which, taken together, has increased our chance that we will live a life that fits our individual needs (Veenhoven 1999). Technological development has fostered freedom indirectly, since it pressed to an ever more complex division of labor, which has resulted in greater personal autonomy in a context of greater mutual dependence (e.g. Lensky et al.

1995). This links up with a third explanation, which is that modern society provides a challenging environment that fits an innate human need for self-actualization. In this view, the human species evolved in rather tough conditions and therefore typically thrives in modern society with its complexities, competition and choices. One of the reasons for the low quality-of-life in agrarian society is probably its boring technology. Probably, increased self-understanding has also contributed to the quality-of-life of modern man and information technology is likely to have facilitated that development. Lastly, a more 'critical' explanation could be that the modern nations successfully exploit the rest of the world, using their superior military technology. There may be some truth in this contention, but life is also getting better in most non-western nations. Most of the poor countries became less poor over the last decade and life expectancy is also rising in most countries (UNDP 2002, 2004).

6 CONCLUSION

Technological development has not always improved the quality of life. The agrarian revolution seems to have bought mankind from the frying pan into the fire. But the later industrial revolution has brought a change for the better. We now live longer and are healthier than ever before in human history and we are probably also happier.

Scheme 1
Four qualities of life

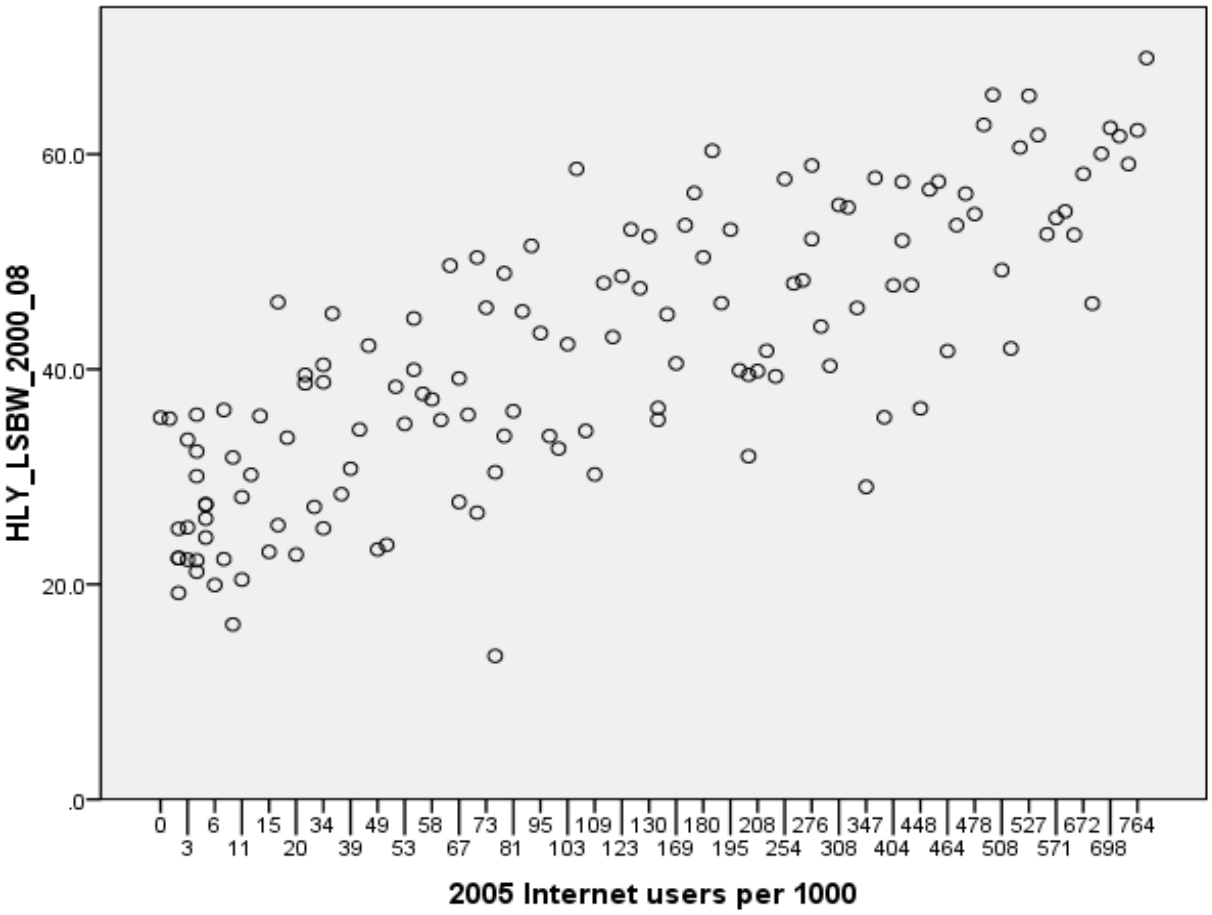
	Outer qualities	*Inner qualities*
Life-chances	**Livability of environment**	**Life-ability of the person**
Life-results	**Utility of life**	**Satisfaction**

Scheme 2
Analogous concepts in biology

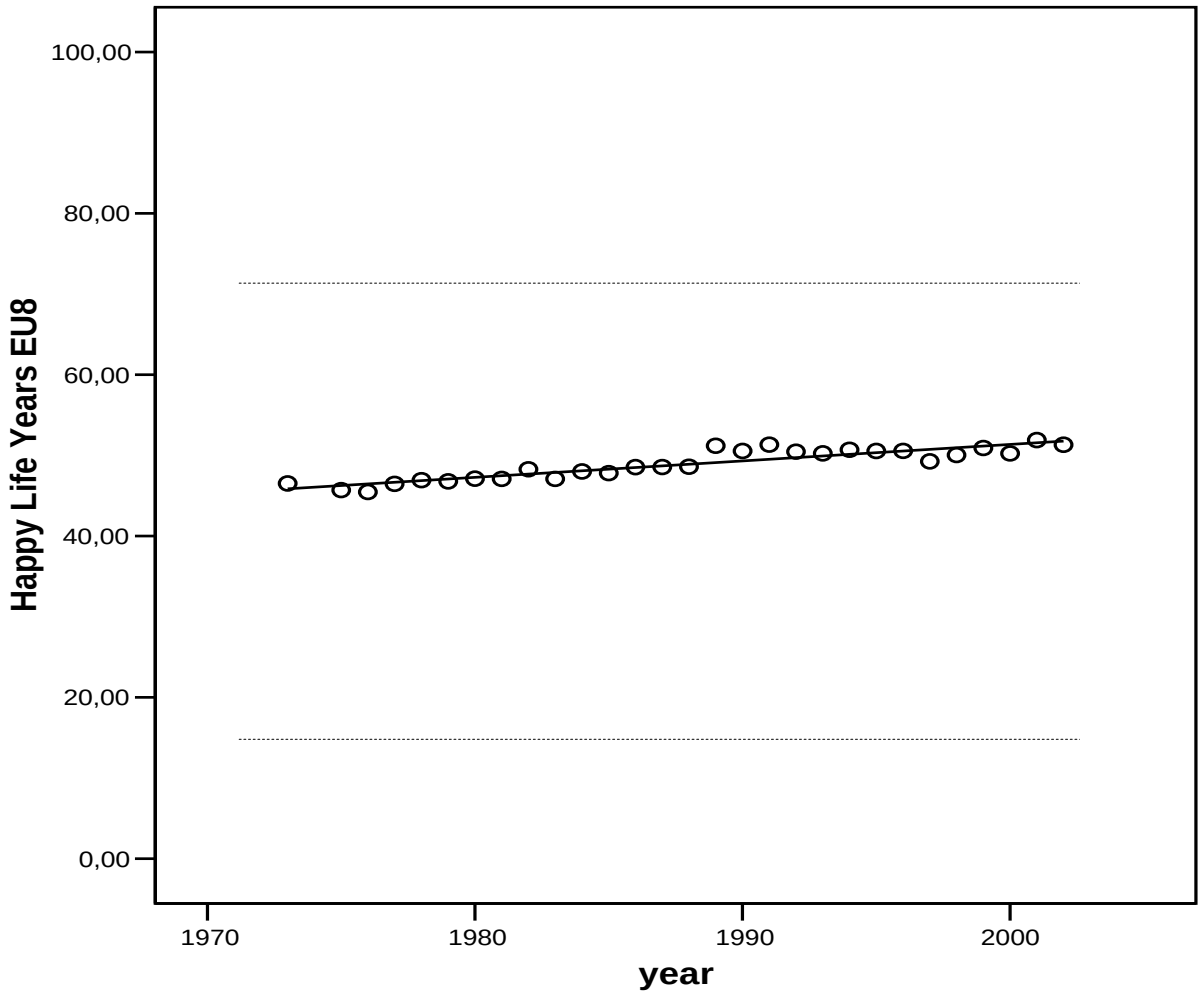
	Outer qualities	*Inner qualities*
Life-chances	**Biotope**	**Fitness**
Life-results	**Continuation of species** **Ecological functions**	**Survival**

Scheme 3

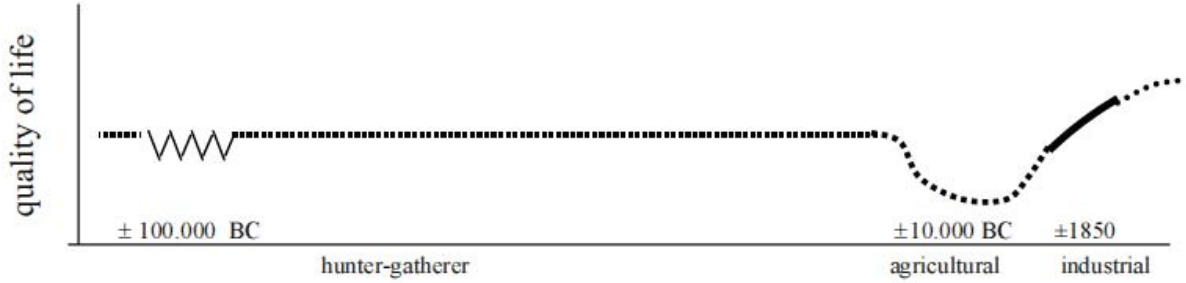
Happy Life Years and Internet penetration in 138 nations around 2005



Scheme 4
Trend Happy Life Years in 8 EU-nations 1973-2008



Scheme 5
Quality-of-life over human history



Appendix A

Variables used in comparison across contemporary nations (section 3.1)

Variable	***Measurement***	***Source***
Happiness	Average response to question about life satisfaction on Scale 0-10	World Database of Happiness, States of nations, variable HappinessLSBW_2000.08
Life expectancy	Estimated longevity of present generation from birth on	Human Development Report 2007 table 1
Happy Life Years	Estimated longevity x average happiness scale 0-1	World Database of Happiness, States of nations, variable HLY_LSBW_2000.08
Internet penetration	Internet users per 1000 inhabitants	Human Development Report 2007 table 13
Education	Index of Adult literacy (counted 2/3) and school enrolment (counted 1/3)	Human Development Report 2007 table 1
Urbanization	% population living in urban areas	Human Development Report 2007 table 5
Industrialization	Agrarian share of gross nation income in %	World Development Indicators 2007, table 6.14
Economic affluence	Income per capita in purchasing power parities	Human Development Report 2007 table 1

All these variables are in the data file ‘States of Nations 2009’ (Veenhoven 2009d)

REFERENCES

Beck, U (1992)
Risk society: Towards a new modernity
Sage, New Delhi

Braverman, H. (1974)
Labor and monopoly capital: The degradation of work in the 20th century
Monthly Review press, New York, USA

Danner, D.D., Snowdow, D.A. & Friesen, W.V. (2001)
Positive emotions in early life and longevity Findings from the nun study
Journal of Personality and Social Psychology, 80: 804 - 813

Deeg, D.J. & Van Zonneveld, R.J. (1989)
Does happiness lengthen life? The prediction of longevity in the elderly
Veenhoven, R. (Ed.): 'How harmful is happiness? Consequences of enjoying life or not'
Universitaire Pers Rotterdam, Netherlands, pp. 29 – 34

Diener, E. (1994)
Assessing subjective wellbeing: progress and opportunities
Social Indicators Research, 31: 103-157

Diener, E. & Diener C. (1996)
Most people are happy
Psychological Science 7: 181-185

Durkheim, E. (1897)
Le suicide: étude de sociologie
Alcan, Paris, France

Easterbrook, G. (2003)
The progress paradox: How life gets better while people feel worse
Random House, New York, USA

Easterlin, R.A. 1974
Does economic growth improve the human lot?
In: Paul A David and Melvin W. Reder (Eds) 'Nations households and economic growth: essays in honor of Mozes Abramowitz, New York, Academic Press

Easterlin, R.A. (1995)
Will raising the income of all increase the happiness of all?
Journal of Economic Behavior and Organization, vol. 27, pp. 35-48

Easterlin, R.A (2005)
Feeding the illusion of growth and happiness: A reply to Hagerty and Veenhoven
Social Indicators Research, vol. 74, pp.429-443

Edgerton, R.B. (1992)
Sick societies; challenging the myth of primitive harmony

The Free Press, New York, USA

Elchardus, M. (2004)
Sociologie in de onbehaaglijke samenleving (Sociology in uncomfortable society)
Sociologische Gids, 51: 507-515

Estes, R.J. (1984)
The social progress of nations
Praeger, New York, USA

Fischer, C. (1973)
Urban malaise
Social Forces, 52: 222-235

Fisher, C. (2007)
What wealth-happiness paradox? A short note on the American case
Journal of happiness Studies, 9: 216-226

Frederickson, B.L. (1998)
What good are positive emotions?
Review of General Psychology, 2: 300-319

Freud, S (1930)
Das Unbehagen in der Kultur
Abriss der Psychoanalyse; Fisher, Frankfurt am Main, Germany. Translated as “Civilization and its discontents’ Norton, 1961, New York

Hagerty, M.R., Cummins, R.A., Ferris, A.L., Land, K., Michalos, A.C., Peterson, M., Sirgy, J. Sharp, A. & Vogel, J. (2001)
Quality of Life Indexes for National Policy: Review and Agenda for Research
Social Indicators Research Series (book), Vol. 5, 1-96

Hagerty, M.R. (2003)
Was life better in the 'good old days'? Inter temporal judgment of life-satisfaction
Journal of Happiness Studies, 4: 115-139

Hays, D.G. (1994)
On the painfulness of progress
Cross-Cultural Research, 28, 322-326

Heylighen, F. & Bernheim, J. (2000)
Global progress I; Empirical evidence for ongoing increase in quality of life
Journal of Happiness Studies, 1: 293-321

Komlos, J. (1998)
Shrinking in a growing economy? The mystery of physical stature during the industrial revolution
The Journal of Economic History, 58: 779-802

Lane, R. (2000)

The loss of happiness in market democracies
Yale University Press, New Haven, NJ, USA

Lenski, G., Nolan, P. & Lenski, J. (1995)
Human societies; an introduction into macro sociology
McGraw-Hill, New York, USA

Manton, K.E., Stallard, H.D. & Tolley, (1991)
Limits to human life expectancy: Evidence prospects, and implications
Population and Development Review, 17: 603-637

Maryanski, A. & Turner, J.H. (1992)
The social cage, human nature and the evolution of society
Stanford University Press, California, USA

Marx, K (1871)
Das Kapital
Collected works, Akademie Verlag, Berlin Germany Translated as 'Capital: a critique of political economy' Lawrence & Wishart, London, UK

Mead, M. (1953)
Coming to age in Samoa: a psychological study of primitive youth for Western civilization
Modern Library, New York, USA

Moore, S. & Simon, J.L. (2000)
It's getting better all the time. Greatest trends of the last 100 years
Cato Institute, Washington, USA

Nesse, R.M. (2004)
Natural selection and the elusiveness of happiness Philosophical Transactions of the Royal Society, Biological Sciences, 359: 1333 -1347

Nussbaum, M. C. (2000)
Women and Human Development: The Capabilities Approach
Cambridge University Press, Cambridge

Ott, J.C. (2001)
Did the market depress happiness in the US?
Journal of Happiness Studies, 2: 433 – 443

Putnam, R.D. (2000)
Bowling alone: the collapse and revival of American community
Simon & Schuster, New York, USA

Riesman, D. (1950)
Lonely crowd: a study of the changing American character
Yale University Press, New Haven, USA

Ritzer, G. (1993)
The McDonaldization of society

Pine Forge Press, Thousand Oaks, CA, USA

Sanderson, S.K. (1995)
Social transformations
Blackwell, UK

Saris, W., Scherpenzeel, A.C. & VanWijk, T. (1998)
Validity and Reliability of Subjective Social Indicators
Social Indicators Research, 45: 173-199

Seligman, M.E. (1990)
Learned optimism
New York Pocket Books, USA

Schwartz, B. (2004)
The paradox of choice: Why more is less.
HarperCollins, New York, USA

Stam, J. & Veenhoven R. (Eds.) (2007)
Quality of life& happiness of people in Japan and The Netherlands
NIOD Encounters Series Volume I, KIT Publishers, Amsterdam, The

UNPD (1990, 2000, 2004, 2009)
Human development report
United Nations Development Program (UNDP), Oxford University Press, New York, USA

VanHemert, D.A., VandeVijver, F. & Poortinga, Y.P. (2002)
The Beck depression inventory as a measure of subjective wellbeing in a cross-national study
Journal of Happiness Studies, 3: 257 - 286

Vaupel, J.W., H. Lundström, (1993)
The future of mortality at older ages in developed countries.
W. Lutz (Ed.): The future population of the world: What can we assume today? IIASA. Earth Scan Publications, Ltd. London, UK

Veenhoven, R. (1984)
Conditions of happiness
Kluwer Academic, Dordrecht, Netherlands

Veenhoven, R. (1991)
Is happiness relative? Social Indicators Research, 24: 1-34

Veenhoven, R. (1995)
The cross-cultural pattern of happiness Test of predictions implied in three theories of happiness
Social Indicators Research, 34: 33-68

Veenhoven, R. (1993)
Happiness in nations

RISBO, Rotterdam, The Netherlands. A 2004 update is available on: www2.eur.nl/fsw/research/happiness

Veenhoven, R. (1996)
Happy life expectancy: A comprehensive measure of quality-of-life in nations
Social Indicators Research, 39: 1-58

Veenhoven, R. (1997)
Progrès dans la compréhension du bonheur
Revue Québécoise de Psychologie, 18: 29-74
English version available on: www2.eur.nl/fsw/research/Veenhoven

Veenhoven, R. (1999)
Quality-of-life in individualistic society: A comparison of 43 nations in the early 1990s
Social Indicators Research, 48: 157-186

Veenhoven, R. (2000)
The four qualities of life: Ordering concepts and measures of the good life
Journal of Happiness Studies, 1: 1-39

Veenhoven, R. (2000b)
Wellbeing in the welfare state, level not higher distribution not more equitable
Journal of Comparative Policy Analysis, 2: 91-125

Veenhoven, R. (2001)
Are the Russians as unhappy as they say they are?
Journal of Happiness Studies, 2: 111-136

Veenhoven, R (2005)
Return of inequality in modern society? Test by dispersion of life-satisfaction across time and nations
Journal of Happiness Studies, Special issue on Inequality of Happiness in Nations', 6: 457-487

Veenhoven, R. & Hagerty, M. R. (2006)
Rising happiness in nations 1946-2004. A reply to Easterlin
Social Indicators Research, 79: 421-436

Veenhoven, R. (2009a)
World Database of Happiness: Continuous register of research on subjective enjoyment of life.
Erasmus University Rotterdam, The Netherlands
Available at: http://worlddatabaseofhappiness.eur.nl

Veenhoven, R. (2009b)
Happy Life Years in 144 nations 2000-2008: How long and happy people live
World Database of Happiness (Veenhoven 2009a) Rank Report 2009-2.

Veenhoven, R. (2009c)
Trend Happy Life Years in nations 1946-2008
World Database of Happiness (Veenhoven 2009a), Collection 'Happiness in nations', Trend Report 2009-2

Veenhoven, R. (2009d)
States of Nations
Data file available on request Part of World Database of happiness (Veenhoven 2009a)

Veenhoven, R. (2009e)
How do we assess how happy we are?
In: Dutt, A. & Radcliff, B. (eds.) 'Happiness, Economics and Politics, Edward Elger Publishers, USA (in press)

Veenhoven, R. (2010)
Capability and happiness: conceptual differences and reality links
Paper under review

WHO (2004)
World Health Report 2004
Geneva, Switzerland

NOTES

[1] Earlier versions of this chapter have been published in the European Psychologist, 2005, special section on 'Human development and Well-being', vol. 10, pp.330-343 and in: Yew-Kwang Ng & Lok Sang Ho (Eds.) 'Happiness and Public Policy, Theory, Case studies and Implications' Palgrave-Macmillan, New York, 2006, ISBN 13: 978-0-230-00497-9, chapter 2, pp.19-44