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Sen and the art of quality of life maintenance: Towards a general theory of quality of life and its causation

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Abstract

Sen's capability approach permits re-appraisal of a central concept in health and social care, and international development—'quality of life' (QoL). We compare Sen's capability view of QoL with current views in health care, and re-define QoL as 'the gap between desired and actual capabilities'. A causal pathway linking resources to capabilities, and finally to QoL, is postulated. The notion of 'cognitive homeostasis' is introduced to explain the observed curvilinear relationship between resources and QoL. A separate set of factors is identified that act to sustain or destabilise QoL. We conclude by examining the model's implications for policy and evaluation.
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1. Introduction

Defining a good quality of life, and answering the related question of life's ultimate meaning or purpose, has taxed the energies of religious thinkers, philosophers, artists, and writers throughout history. From the middle of the twentieth century, such questions have also been given increasing importance in the empirical research literature under the heading of 'quality of life' or 'wellbeing', and have challenged scientists from fields as diverse as social policy, economics, psychology, health services research and medicine. Many researchers in these fields have been ignorant of the work of people from other disciplines, unaware also of the lineage of philosophical and

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theological writings and of current philosophical and ethical debates on the quality of life. This is despite the work of organisations like the Human Capabilities Development Association and the associated Centre for the Study of Faith in Society at the Von Hugel Institute in Cambridge who have attempted to bring these approaches together. The diversity of approaches has meant that little progress has been made toward a widely accepted general theory of the nature of quality of life, and its relationship to known and hypothesised causal determinants.

In this paper, we attempt to arrive at a general model of quality of life and its determinants. This is done by, first, outlining some perspectives on whether a general theory can and should be pursued, and by setting out the parameters of our analysis. Having then, hopefully, convinced the reader to carry on, a general and working definition of quality of life is offered, focussing largely on the work of Sen. Following this, the evidence on what are currently thought to be the causal determinants of quality of life and/or wellbeing is reviewed. The paper then moves to some hypotheses about a possible mechanism of action for these causal determinants, within the context of our definition of quality of life, and uses these hypotheses as the basis for the construction of a general model. In the final part of the paper, we look at the implications of the general model for social and economic policy and the evaluation of policy interventions in national and international contexts.

2. Perspectives on pursuing a general theory: the 'impossibles', the 'questionables', and the 'incredibles'

Many have argued that the search for a universally applicable model that can account for the quality of a human life is futile. Although the arguments are almost as diverse and numerous as their proponents, they essentially fall into two camps: arguments that a universal or 'general' theory of quality of life is, a priori, impossible; and those which accept that a theory is possible, but question the value or desirability of pursuing it, at least for the foreseeable future.

The 'impossibles' invoke, for example, the argument that each individual is unique in their subjective conceptualisation of life quality, in demarcating their relevant evaluative space from the universe of possible ingredients of a good life, and in the relative weighting of those ingredients (O'Boyle et al., 1992; Ruta et al., 1994; Nord, 2001). Other arguments in this camp revolve around notions of relativism, whether defined in terms of cultural, positional or other interpretations of relativity (Culyer, 1994; Williams, 1985; Sen, 1985a,b), and the potential ethical implications of a normative theory based on the perspectives and practices of the powerful (Clark, 2000). The 'questionables' invoke the argument that there is an inevitable mismatch between a theoretical quality of life 'solution' to a theoretical question, and practical solutions to real world problems of resource scarcity, which mean that many people struggle to live at all (Megone, 1994). Alternatively it is argued that our current knowledge and understanding is so limited, or the scope and complexity required of a 'general' theory so great, as to make it 'not even worth considering at this stage' (Cummins, 1996).

Having set ourselves the challenge of attempting to formulate a general theory of quality of life, we can render the task marginally less daunting by restricting the scope of the model only to quality of life over the long-term. We will not attempt to incorporate transient quality of life 'states' like pleasure or happiness (defined solely as the presence of positive and absence of negative affect) within the model. As we contend later in this paper, these are not the same as having good quality of life, though they are often mistaken for it. Therefore, we will not interest ourselves in the relationship between transient mood states and quality of life. Neither will we primarily interest ourselves with the short-term effects of pleasurable or hedonistic states on quality of life except in so far as some people consistently value the pursuit of pleasure for its own sake. We will however

consider how the notion of happiness relates to concepts of wellbeing and utility, and how all three can be accommodated within a working definition of quality of life over the long term.

Our paper begins and ends with the capabilities approach to conceptualising and assessing quality of life advocated by Amartya Sen, the economist-philosopher. Our starting point is to consider Sen's dissatisfaction with the welfarist interpretation of wellbeing and his criticisms of utilitarianism that led him to an alternative 'functionings and capabilities' framework for defining quality of life. We then identify similarities to Sen's approach in many of the popular conceptualisations of quality of life in the health field in the last 25 years. They recur with such singular frequency as to justify, with one key assumption, a common working definition of quality of life which we shall call a definition of quality of life as 'the gap between capability reality and expectations'. We discuss some of the implications of adopting this definition in the construction of a more general model of quality of life and its determinants, particularly with respect to relativity and subjectivity. We conclude this section by arguing that, ironically, and perhaps 'incredibly', Sen's original rejection of utility has led us to a QoL Capability Gap approach which could actually be viewed as a re-expression of Bentham's original utility function (Goldworth, 1983).

3. Defining quality of life

There is little cross-disciplinary consensus on the definitions of happiness, wellbeing, utility, and quality of life.[1] Indeed these terms are often defined with reference to each other, with the result that they are frequently used interchangeably, especially within economics. Bentham, for example, defined both happiness and wellbeing as 'the excess of pleasure over pain' (Goldworth, 1983). More often, the ontological relation of one to the other, and the extent to which the terms differ, converge, overlap, subsume each other, or are more or less useful, form the basis of considerable debate in addressing questions of distributive justice and social and economic policy.

Much of the ensuing disagreement appears often to arise from differences in interpretation of stated definitions, and in some cases even differences in translation, rather than in any fundamental differences in opinion or philosophy. These differences then compound each other, generating ever more convoluted opportunities for apparent disagreement. For example, Sen is one of the most influential critics of the 'welfarist' or 'utilitarian' interpretation of wellbeing. Welfarism, according to Sen, 'values states of affairs in an informational-limited way, attaching no intrinsic importance to non-utility information' (Sen, 1985a,b). Sen cites three different interpretations of the term utility: (1) as a numerical representation of an individual's choice behaviour; (2) as a function of happiness; or (3) as desire fulfilment (Sen, 1985a,b). If defined and interpreted in these ways, Sen argues, utility fails to capture other crucial 'non-utility' attributes that make up wellbeing, such as regard for others, or notions of justice. However, other interpretations of utility are possible, as can be seen from a consideration of original utility definitions. For example, in his original inventory of 'pleasures', Jeremy Bentham regarded goodwill, sympathy, and honour all as varieties of pleasure to be included in a utility function (Goldworth, 1983); attributes that Sen considered to be absent from utility. Indeed Aristotle's intended meaning of the term happiness (eudemonia) extends well beyond the commonly understood meaning of happiness (particularly in the context of utilitarianism) as the fundamental motivation to pursue pleasure, avoid pain, and value positive mental states. Unlike 'hedonia', eudemonia is thought to occur

[1] See Alkire's review of 39 definitions of wellbeing from psychology, philosophy, and the other social sciences (Alkire, 2002a,b).

when one's life is orientated towards a good end or 'telos' (e.g. 'human flourishing' or 'authentic happiness' (14). This goal can be achieved in a number of ways, for example, fulfilling one's potential through purposeful activity, living according to one's values (living 'authentically'), being intrinsically motivated, or acting in an autonomous way (Ryan and Deci, 2001). Utility as the pursuit of happiness could therefore, under an alternative interpretation of happiness, be conceived to include some of Sen's 'non-utility' attributes of wellbeing.

In our pursuit of a working definition of quality of life, let us for the moment accept Sen's interpretations of utility and his analysis of its consequent limitations in encapsulating wellbeing. In place of a utilitarian approach Sen proposes that wellbeing be considered in terms of a person's 'ability to do valuable acts or reach valuable states of being' (Sen, 1979). Thus, the various things that a person manages to 'do' or 'be' in leading a life Sen terms 'functionings'. The 'capability' of a person 'reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection' (Sen, 1993). For Sen, then, a person's wellbeing can be assessed in terms of their capability to achieve personally and socially valued functionings. At one point he even goes so far as to equate this with a definition of quality of life (Sen, 1993).

However Sen goes on to offer another definition of quality of life that expands the concept beyond their capability notion of wellbeing. First he states that 'the quality of life a person enjoys is not merely a matter of what he or she achieves, but also of what options the person has had the opportunity to choose from' (Sen, 1985a,b); in other words it depends on the freedom to achieve and not on the achievement per se, i.e. the 'real opportunities that the person has, especially compared to others' (Sen, 1985a,b). Of course, although Sen is thinking in broader terms, part of this freedom relates to the availability of resources and how these are deployed in a person's 'resource profile' (McGregor, 1998), which is an important component of any economic model of quality of life. The economic argument would be that we are interested in measuring quality of life because decisions have to be made about how to allocate scarce societal resources in pursuit of this goal. This link back to resources or 'goods', of course, provides another connection between Sen and more conventional economic frameworks. It is important to stress here because, rather than us asking the more abstract question about the meaning of a good life devoid of any social action, the question then becomes how much of such life can be produced by different uses of society's scarce resources and whether some resource categories, for example, cultural and material, might work against each other (we return to this question in the final section).

Secondly, in the evaluative space of human capabilities to achievement, Sen goes on to argue that a person can have objectives other than the pursuit of wellbeing. These encompass all those other goals that a person strives to achieve in life, and which give life meaning and purpose, for example, living by a moral code, or duty to one's loved ones (which, again, it might be argued is consistent with standard welfare economics, but also with a eudemonic orientation in Aristotelian terms). These other objectives of human achievement he terms collectively 'agency goals' (Sen, 1985a). The result is a more complex four-fold classification framework for conceptualising quality of life that includes wellbeing amongst four interdependent concepts: wellbeing achievement; wellbeing freedom; agency achievement and agency freedom (Sen, 1985a; Gaspar, 2004). It would seem reasonable to express agency goals as simply another vector of functionings ('doings' and 'beings'), which while distinct from that collection of functionings that contribute to wellbeing, can nevertheless be included amongst that collection of valued functionings that make up a person's evaluative space. One might even go so far as to conceive of agency as an essential component of wellbeing, although we acknowledge that people can experience different amounts of agency in different domains of life (e.g. as a wife or an employee) and might have different expectations in these areas (Alkire, in Gough and McGregor, 2007). In a less individualistic understanding of

wellbeing, the wellbeing of family and society may be understood not only as an instrumental way of achieving one's own wellbeing but an intrinsic part of it. This requires a larger notion of the self than is common in the West but would be perfectly understandable, say, to a woman from Bangladesh. It is important to note that Sen may not be comfortable with extending the reach even of capability, let alone wellbeing, to encompass agency achievement as the capability approach is primarily an 'opportunity concept' (Sen, 2002). However, he has acknowledged the interdependence between agency and wellbeing (Sen, 1985a,b). For the moment, let us propose that a person's quality of life within this more parsimonious interpretation of Sen's framework can be defined as a product of: '. . . the extent to which a person's valuable functionings are achieved and the extent to which they have had the opportunity to choose from valuable options'.

How does this definition of quality of life compare with various definitions to be found in the field of health care? This area of research has seen a rapid growth in interest in the concept of quality of life in the last 25 years, and 'provides a rich ground for comparing, contrasting, and assessing different approaches' (Sen, 1993). In the UK, the NHS Research and Development Health Technology Assessment (HTA) programme commissioned a systematic review of patient-based outcome measures for use in clinical trials. This assessment included a comprehensive review of definitions of quality of life (Fitzpatrick et al., 1998). As shown in Box 1 , the

Box 1. Definitions of quality of life (and health-related quality of life) from the health field.

'Quality of life is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns' (WHOQOL Group, 1993).

'Quality of life refers to patients' appraisal of and satisfaction with their current level of functioning as compared to what they perceive to be ideal' (Cella and Tulsky, 1990).

'Health-related quality of life is the value assigned to duration of life as modified by the impairment, functional states, perceptions and social opportunities that are influenced by disease, injury, treatment, or policy' (Patrick and Erickson, 1993).

'Health-related quality of life refers to the level of wellbeing and satisfaction associated with an individual's life and how this is affected by disease, accidents and treatments from the patient's point of view' (Lovatt, 1992).

'Quality of life is enhanced when the distance between the individual's attained and desired goals is less' (Bergner, 1989).

'Quality of life measures the difference, or the gap, at a particular period of time, between the hopes and expectations of the individual and that individual's experiences' (Calman, 1984).

authors were able to illustrate the range of definitions in the medical research and health policy literature.

The authors concurred with another review of competing definitions of quality of life in medical research, which concluded that the following simple definition 'captures much that is important across . . . different perspectives':

'Quality of life in clinical medicine represents the functional effect of an illness and its consequent therapy upon a patient, as perceived by the patient' (Schipper et al., 1996).

This definition, and those from which it derives, show a remarkable convergence with the definition arising from Sen's capabilities framework. This would come as no surprise to Sen, as an earlier review of health care measures of quality of life (Brock, 1993) prompted him to comment that '. . . doctors and philosophers, looking for the best way to assess the quality of patient's lives, have increasingly turned to a list of functional capabilities, not unlike those proposed in the capability literature' (Sen, 1993). If we follow the resonant concepts contained within all these definitions to the point of convergence with Sen, we seem to arrive at a definition of quality of life that has enormous intuitive appeal, owing to its potential applicability, comprehensiveness and generalisability. The definition states that:

Quality of life is the gap between what a person is capable of doing and being, and what they would like to do and be; in essence it is the gap between capability reality and expectations.

Thus, where Sen suggested that quality of life 'be assessed in terms of the capability to achieve valuable functionings' (Sen, 1993), in the context of a gap hypothesis of quality of life, where the judgement about what is considered 'valuable' is made in assessing the extent to which reality matches expectations, it does not seem unreasonable to assess quality of life in terms of the gap between what a person is *actually* capable of doing and being, and what they would *like*. Introducing this notion of an *expected* or *desired* capability (which is different to a capability that one has reason to choose and value) seems to be a reasonable and novel adaptation of the capability approach that still incorporates the notion of opportunity. In arriving at this definition, which we will now adopt as our working definition, we have introduced a fundamental assumption not necessarily implicit in the capability approach. If quality of life is defined as we suggest, then only the person living that life is fit to judge its quality, for only they can assess the gap between their perceived expectations and current reality (Nord, 2001). In Sen's language, value judgements about the exact capability set of doings and beings to be included in individuals' evaluative space must rest, under this definition, with the individuals themselves—yet another important link with conventional economics and participatory and locally-led forms of development. While Sen acknowledges that for any but the most elementary functionings (such as being nourished), individuals may differ substantially from each other in the values they attach to different functionings, he is not prepared to commit the capabilities approach to a wholly subjectivist and relativist interpretation (Sen, 1993). This reluctance arises primarily from Sen's difficulty in accepting that the apparent human capacity to adapt to the most unfavourable of circumstances is an argument against intervention. For example, the positive self-reported wellbeing of the 'persistently deprived', the 'perennially oppressed minorities in intolerant communities, traditionally precarious sharecroppers living in a world of uncertainty, routinely overworked sweatshop employees in exploitative economic conditions, hopelessly subdued housewives in severely sexist cultures' (Sen, 1999). Yet neither is Sen prepared to hitch his framework exclusively to the objectivist-universalist wagon, despite the pleas by followers like Nussbaum for him 'to be more radical . . . by introducing an objective normative account of human functioning and by describing a procedure of objective evaluation by which functionings can be assessed for their contribution to the good human life' (Nussbaum, 1998). Sen replies 'I certainly have no great objection to

anyone going on that route. My difficulty with accepting that as the only route on which to travel . . . arises in fact, from the consideration that the use of the capability approach as such does not require taking that route, and the deliberate incompleteness of the capability approach permits other routes to be taken which also have some plausibility' (Sen, 1993).

Defining quality of life as the gap between capability expectations and reality, subjectively evaluated by the person living that life, would appear on the face of it to constitute the kind of plausible use of the capability approach to which Sen refers. Other philosophers have made a strong case that this subjectivist application of the capability approach is the only one with real validity. Arneson wryly makes this point when he states 'I doubt that the full set of my functioning capability [matters] for the assessment of my position. Whether or not my capabilities include the capability to trek to the South Pole, eat a meal at the most expensive restaurant in Omsk . . . matters not one bit to me, because I neither have, nor have the slightest reason to anticipate I ever will have, any desire to do any of these and a myriad other things' (Arneson, 1989).

One might attempt a reconciliation of the objective and subjective views in the context of quality of life by arguing, as Morreim does, that 'objective' quality of life assessments are only objective in the sense that they are made on the basis of inter-subjectively observable, material facts about a person weighted by some form of socially shared evaluation of how those facts impact upon that person's quality of life (Morreim, 1986). Thus, a normative, 'objective' evaluation by which functionings can be assessed for their contribution to a person's quality of life is possible only in the sense that it represents the mean subjective valuation of society. However, this presupposes that the third person valuations, made by a representative individual or group in society, of an individual's capabilities, would not differ if those same third persons were actually experiencing that life in the first person. In other words it assumes that valuations of quality of life do not vary with the position of the evaluator relative to the life being valued. We believe this not to be the case, and that the 'position-relativity' implicit in our definition of quality of life constitutes a powerful argument in its favour.

The collection of functionings, from the myriad of possibilities in the capability set, that a person values, and the extent to which they perceive that expected capabilities are achieved, will inevitably be determined by the person's personal, social and cultural location in the environment from which the valuations are made. This 'location' can be pinpointed by an as yet unknown number of parameter co-ordinates that are likely to include factors such as age, sex, personality, physiognomy, material wealth, religious and cultural beliefs, degree of autonomy, social and family relationships, physical and mental functioning, and the duration of these and many other experiences. Thus, person A, who is 21 years old, female, extrovert by nature, naturally endowed with athleticism, heir to a fortune, a Muslim, with a loving extended family, and physically healthy, will almost certainly define and value the capability set of person B, who is 65 years old, male, introverted by nature, naturally unathletic, born into poverty, an atheist, living alone and a wheelchair user with painful rheumatoid arthritis for the last 20 years, very differently from person B's definition and valuation of their own capability set. It is quite likely therefore that Person A would assess Person B's quality of life as being much lower than Person B's assessment of Person B's quality of life. Neither person's assessment is 'right' or 'wrong'. However in this scenario, most would agree that in a policy context, *if* a key aim of social or economic policy is to improve the quality of life of policy beneficiaries, and *if* the aim of quality of life assessment is to inform these policy decisions, then Person A and Person B are located so far apart relative to each other in the universe of human experience that Person A's assessment of Person B's quality of life must surely be invalid *if* Person B is the intended beneficiary.

An analogy can be drawn with the physical universe, where relativity theory predicts that an observer A, standing on earth, who is asked to assess the time taken for a spaceship travelling at the speed of light to travel to a star thirty light years away, will arrive at a different value than observer B, who is sitting in the spaceship. On earth, thirty years will have passed for observer A, while for observer B no time will have elapsed. In this analogy again neither observer's assessment is right or wrong. However, *if* the aim of assessment is to inform observer B's decision to travel, then it is B's timekeeping that is valid, for B needs to know that they will not have aged 30 years during the trip (of course this analogy cannot be stretched to include a return trip, as observer A's timekeeping may then become more valid for the space traveller who may not wish to return to find their loved ones have aged 60 years! However, that consideration would then come into B's personal calculation anyway).

In the next section, we provide empirical evidence for a relationship between the factors described above and quality of life that is consistent with our proposed definition. It also accommodates the phenomenon of adaptation that causes Sen such discomfort with relying on individuals' own perceptions of their quality of life, and which leads us to a general theory for quality of life and some of its causal determinants. In the final section, we will return to the issue of third person valuation when we attempt a second reconciliation of the objectivist–universalist with the subjectivist–relativist views and consider whether the general theory of quality of life supports Sen's contention that equality of basic capability has certain clear advantages over other types of equality.

4. Empirical evidence for some of the causal determinants of quality of life

A phenomenon of almost as great interest to economists, behavioural economists, and psychologists as adaptive preferences is the way that people consistently mispredict the factors that determine their quality of life, or in lay person's terms, fail to understand what will really make them happy. For example, Frey and Stutzer (2004) maintain that people overestimate the extrinsic or superficial properties of goods and experiences and consequently allocate their time to activities like acquiring income and gaining status, rather than spending time on family, friends or hobbies, which would give them more lasting satisfaction. Similar observations have been made by economists like Easterlin and Kahneman (e.g. in a classic paper with Schkade entitled 'Does living in California make people happy?' (Schkade and Kahneman, 1997), and by 'positive psychologists' like Kasser (2002), who also note that intrinsically satisfying activities provide lasting satisfaction without the 'diminishing returns' that apply to personal income.

This paradox, resulting from what Schkade and Kahneman (1997) call a 'focusing illusion', partially explains why so much research has focused on the relationship between quality of life and income and why this relationship receives so much attention in this section of our paper.

4.1. Income and quality of life

It would be both insensitive and foolish to say that personal income does not matter, and its importance as a buffer may be particularly obvious in poorer countries. Oishi et al., note that in developing countries satisfaction with financial status is a stronger predictor of life satisfaction than satisfaction with home (Oishi et al., 1999) and Veenhoven (2001) also observes stronger within nation correlations between income and wellbeing in poor countries (confirmed by time series data in India, Mexico, and Philippines).

Within countries the effect of income is not uniform; while the average correlation between income and wellbeing in the USA is only 0.13 (Diener et al., 1993) compared to 0.45 in the slums of Calcutta (Biswas Diener and Diener, 2001), Diener also observed a steep reduction in quality of life when household income fell below a threshold of US$ 10,000 per annum, a point we explore further later in this section.

Nonetheless, personal income may matter less than we think, or for rather different reasons. For example, it seems that once people exceed 'subsistence' level, increases in income are not matched by increases in quality of life (Biswas Diener and Diener, 2001; Cummins, 2000). In fact a recent review by Ahuvia (2002) calculated that individual income only accounted for 2–3% of the variation in individual quality of life. This is partly due to *habituation* or *adaptation*, which enables people to adjust quickly to bad news (for example, Brickman et al.'s classic study of the quality of life of paraplegics and lottery winners (1978) and even more quickly to good news, so, for example, gaining college tenure offers much less pleasure than anticipated. A related phenomenon is what Parducci calls the 'hedonic treadmill' (1995) where people's expectations rise in line with their reality so that happiness is always a few steps ahead. This was empirically demonstrated by Van Praag and Fritjers (1999) whose study showed that a 10% rise in actual income causes a 5% rise in required income. Being materialistic or focusing on extrinsic goals like status or wealth can actually reduce people's satisfaction with life, even where the goal pursuit is successful (Kasser, 2002). The experience of intense pleasure has also been hypothesised to damage people's long-term life satisfaction by altering the 'set point' at which people experience good Quality of life, making ordinary life much less satisfying (Van Praag and Fritjers, 1999). In the next section, we introduce the concept of the 'homeostasis of subjective wellbeing' as an explanation for the mechanism through which such adaptations operate.

Another important influence on quality of life comes from *social comparison* or *rivalry*, which affects people's judgement of whether they are meeting their goals and living a good life. For example, Graham's work in Russia and Peru (Eggers et al., 2004a,b; Graham and Felton, 2005) and Fafchamp's in Nepal (2003) suggests that rivalry is one of the most important determinants of subjective wellbeing. Their hypothesis is supported by the recent finding that the increase in Russian unemployment in 2001 correlated with a commensurate increase in life satisfaction; suggesting that "when individuals observe their peers suffering in a troubled economy, they lower their standards of what is good enough. All else equal, they thus perceive themselves to be better off in worse times" (Eggers et al., 2004a,b). A similar phenomenon is the 'frustrated achievers' identified by Graham and Pettinato (2001). These are people in poorer countries who despite experiencing rapid increases in their income have actually become less happy because their aspirations have grown even faster.

Between nation comparisons of wealth and SWB appear to mirror within nation correlations between SWB and personal income (Veenhoven, 1991; Diener and Suh, 1999), demonstrating the same diminishing returns. While there are substantial correlations between wellbeing and per capita income across nations (between 0.50 and 0.70) (Diener and Biswas-Diener, 2002), when the sample is limited to countries with an average per capita income of over US$ 10,000, they reduce to 0.08 (Diener and Seligman, 2004). Further evidence for diminishing returns comes from Helliwell's analysis of data from the World Values Survey (conducted in 49 countries in 1980–1982, 1990–1991 and 1995–1997), which demonstrates that happiness only increases with rises in national income when the average individual income is below US$ 15,000 (Helliwell, 2003). This trend can be seen in Fig. 1 below, which illustrates the inverted 'hockey-stick' 'dose response' curve discussed later in the paper.

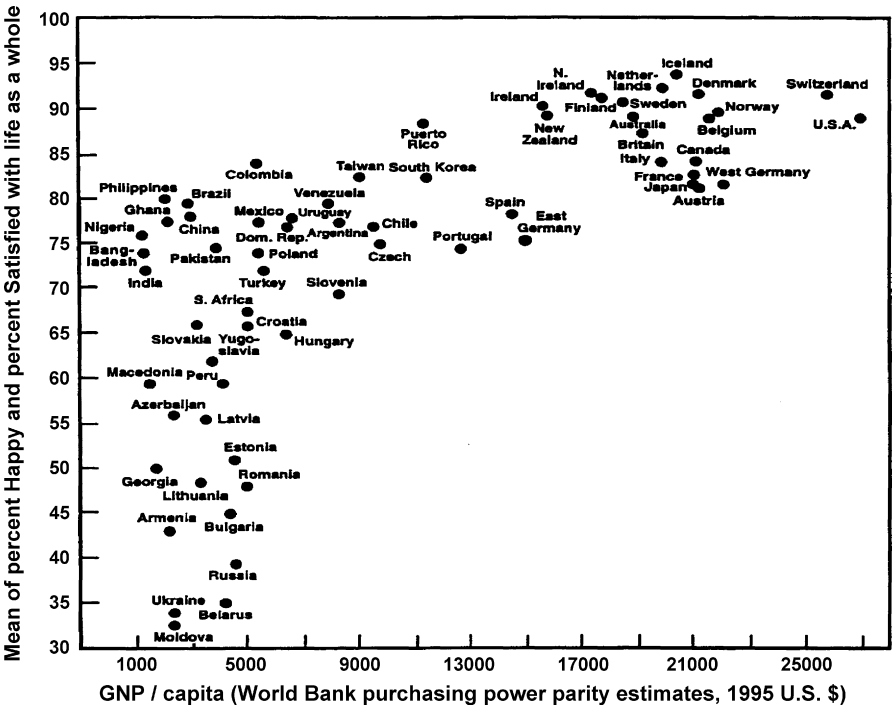

Fig. 1. Subjective wellbeing by level of economic development. World Values Surveys; GNP/capita purchasing power estimates from World Bank, World development report, 1997 (Fafchamps and Shilpi, 2003).

Inglehart and Klingemann (2000) and Veenhoven (1991) use Maslow's hierarchical theory of need satisfaction (Maslow, 1954) to explain the curve, suggesting that once basic needs are met, people move to a 'post-materialist' phase where they focus on self-actualisation. Another interesting research question suggested by the curve is that not every poor country reports correspondingly low SWB (Suh, 2000). This has been described as the 'Latin American effect'[2] as the majority of Latin American counties (e.g. Columbia, Mexico, and Venezula) are only slightly below the level of SWB reported in Western Europe, North America, and Australasia, despite considerably lower GNP per capita. The opposite effect can be seen with Japan where there has been no change in happiness since 1960, despite a six-fold rise in income per head (Diener and Suh, 1999; Frey and Stutzer, 2002a,b).

This is not entirely a cultural artefact as the growth in prosperity in Europe and North America during the past 30 years has also not been matched by a corresponding rise in quality of life (Diener and Biswas-Diener, 2002). For example, according to the Euro-barometer statistics from the early 1970s there has been no increase in happiness in the sample as a whole and only Denmark and Italy report that they are happier (Inglehart and Klingemann, 2000). Easterlin's exploration of the distribution of happiness in the US between 1975 and 1996 came to a similar conclusion; despite changes in absolute income the same proportion of people in the top and bottom quartile

[2] Interestingly, the Latin American effect also distorts data on income inequality where, because people are generally satisfied in Latin American countries (despite unequal distribution of income), inequality appears to have a positive effect on wellbeing! (Bjornskov, 2003).

described themselves as happy (2004). The level of happiness also remained flat within each cohort, despite rises in income across the life span. Easterlin's findings appear to support not only the threshold theory of SWB, but also the influence of social comparison on individual judgements of life satisfaction and happiness. The US figures may also be explained by a corresponding rise in measures of 'illbeing' over the same period, for example, a 10-fold increase in recorded depression and anxiety over the past 50 years (Twenge, 2000), and a decline in levels of trust (Putnam, 2000) and social connection (Helliwell, 2003).

4.2. Social relationships and quality of life

The decline in social connection is an especially worrying trend as there is much evidence to suggest that social relationships are both a source of satisfaction and pleasure in their own right and an important buffer for environmental stressors. The 'third variable' of social relationships may explain findings like the similar life satisfaction scores of the 400 richest Americans on the Forbes list and a sample of Maasai herders (5.8 and 5.7 out of 10). It may also explain the dissimilar scores of slum dwellers in Calcutta and homeless people in California, where the former are sustained by their social networks and relationships of mutual respect, while the latter are isolated and marginalized (4.6 and 2.9 out of 10 (Biswas Diener and Diener, 2001)). A similar pattern was found in Veedon's study of chawl dwellers in Bombay where the group that earned the most money and had the highest quality accommodation was also the unhappiest as their work in the sex trade had isolated them from friends and family (Veedon, 2004). Social relationships may be the fulcrum of what Veenhoven calls the subtle balance of environmental 'liveability' and personal 'lifeability' (or capabilities) that generates and maintains good quality of life (Veenhoven, 2000). The way social relationships enhance people's quality of life has been extensively documented, for example, Kahneman et al.'s study of the daily activity of one thousand 'working women' found that on almost all occasions (14 out of 15) people experienced more pleasure doing activities with others than on their own (Kahneman et al., 2003). This is supported by Pavot et al. (1990) who noted that people experience more positive emotions in the company of others than on their own.

4.3. Religious and spiritual beliefs and quality of life

One important source of social relationships is religious practice, which may explain why people who characterise themselves as religious tend to experience greater wellbeing than non-religious people and are 'buffered' against economic and personal 'shocks'. Interestingly, this trend continues when 'being religious' is broken down into its component parts, for example, having religious faith (Clark et al., 2004) and attending church regularly (Helliwell, 2003), and extended to include spirituality and personal beliefs (WHOQOL-HIV Group, 2003, 2004). 'Authenticity', or behaving in accordance with ones values and personality, also appears to be an important aspect of a good quality of life in Europe and the US (Waterman, 1993; Sheldon and Kasser, 1998; Brunstein et al., 1998) and forms part of what Seligman and Csikszentmihalyi, the founder of positive psychology, characterises as 'authentic happiness' (2000). However, its cross-cultural applicability has been questioned (Suh, 2000) as it clearly stems from the hedonic-eudaimonic debate that has split European philosophy post-Aristotle.

4.4. Political participation and quality of life

Political freedom and participation has been identified as such an important influence on quality of life that the correlations between average SWB and average per capita income are substantially

reduced when researchers statistically control for the quality of the government (Helliwell, 2003; Inglehart and Klingemann, 2000). Frey and Stutzer's study of the Swiss cantons with the most and least frequent referenda, observed a difference in happiness between the cantons equal to what would be caused by a doubling of income (2002). These findings have also been confirmed in poorer countries, for example, Valerie Moller's South African research unit has chronicled the unhappiness of the majority population under Apartheid (Moller, 1994, 1995), and Inglehart and Klingemann (2000) have used data from the World Values Survey to show an almost linear relationship between reversed Freedom House ratings for civil liberties and political rights and SWB between 1982 and 1998. Political instability also appears to reduce Quality of life, as shown by the decline in the reported SWB of Russians from 70 to 38% between 1981 and 1996 while GDP per capita remained roughly the same (Inglehart and Klingemann, 2000). Similarly, the lowest SWB score ever recorded (1.6 on a 10 point scale) occurred following the overthrow of the government of the Dominican Republic.

4.5. Life events and quality of life

Material inequality appears to be important, but findings differ between studies and contexts. For example, inequality has a negative effect on happiness in Europe, but not in the US, possibly due to 'inequality aversion' on the part of the Europeans and greater faith in upward social mobility on the part of the Americans (Alesina and MacCulloch, 2004). Unemployment, however, has a huge psychological impact, which exceeds what would be expected from the loss of income (Di Tella et al., 2002) and continues over several years, even after people have found a second job at an almost equal salary (Clark et al., 2004). The impact of unemployment is especially acute in wealthier countries (Helliwell, 2003), in regions where unemployment is low (Clark et al., 2001) and among people who 'cycle' between employment and unemployment (Winkelmann and Winkelmann, 1998). However, its effects even extend to people in the same country who have neither lost their job nor taken a pay cut (Di Tella and MacCulloch, 2001).

On an individual level, life events like bereavement from partner or child have a large and lasting impact on SWB; two separate longitudinal studies of widows noted that their quality of life never returned to its former level (Stroebe et al., 1996; Lucas et al., 2003). Curiously, for other events (for example, disablement) adaptation seems to be fairly swift (Cummins and Nistico, 2002; Suh et al., 1996; Winter, 1999). The difference in people's capacity to adapt to these different types of events may relate to the fundamental human need for 'relatedness', which we addressed earlier; namely the need to feel a sense of belonging and have close and long term social relationships (Sherman et al., 2000; Myers, 1999; Baumeister and Leary, 1995).

4.6. Stable determinants of quality of life

While policy-makers can influence the distribution of income and opportunities for political participation and create environments that support social relationships, there are obviously some important determinants of quality of life that they cannot change. Foremost among these is the genetic component of quality of life, which helps explain its stability over time (Magnus et al., 1993). For example, Diener and Larsen (1993) note that the presence of positive and negative affect, which may be part of people's genetic make up, has a far stronger influence on happiness than events. Similarly, Kahneman et al.'s study of the daily activity of Texan women found that only 6% of the variance in their happiness could be attributed to the activity they were engaged

in (e.g. reading, shopping) while 40% was attributable to the person experiencing it (2003). The genetic component is expressed both directly through inheritance where twin studies suggest that genes account for around half the variance in quality of life (Newman et al., 1998), and indirectly via the 'big five' personality traits (Deneve, 1999). For example, Lykken and Tellegen (1996) noted correlations of 0.44 for identical twins and 0.08 for non-identical, which were stable over five to ten years and even occurred when the twins had been raised apart; and Deneve and Cooper (1998) observed that extraversion correlates positively and strongly with SWB, a finding that is replicated cross-culturally[3] (Lucas et al., 2000). Surprisingly, socio-demographic characteristics like gender have less influence than might be expected (Cummins, 1995). For example, Inglehart notes that women are marginally happier than men but also report higher levels of depression (1990). In some studies, age has been shown to have relatively little effect on quality of life (Carstensen, 1998; Mroczek and Kolarz, 1998; Diener and Lucas, 2000), although other researchers have noted a U-shaped distribution of scores where young and old people report being happier than the middle-aged, possibly due to the dual burden of caring for parents and children, with the 'unhappiest' age band being 30–35 (Frey and Stutzer, 2002a; Inglehardt, 1990). Studies however, have shown a positive relationship between age and SWB in Europe and North America, despite a related decline in physical health. While self-reported health is strongly related to happiness, with, for example, Marmot's study of British civil servants in Whitehall reporting a correlation of 0.60 between subjective poor health and low life satisfaction, this is not so for objective health (Seligman, 2002). The exception to this is chronic, disabling, and largely invisible conditions like chronic pain (Brief et al., 1993), fibromyalgia, and rheumatoid arthritis (Celiker and Borman, 2001). Unsurprisingly, depression and anxiety also significantly lower Quality of life (Koivumaa-Honkanen et al., 2001) and this effect extends to other family members, especially when parents and children are acting as carers.

5. Towards a general theory: a proposed model

The previous section reviewed a selection of empirical studies on the relationship between people's quality of life (and related concepts of subjective wellbeing and happiness), and possible causal or mediating variables. Some of the variables that seem to stabilise people's quality of life are not open to mediation (for example, personality traits such as extroversion); however, the cultivation of others such as strong relationships and political engagement can be supported, or at least not inhibited. The destabilising variables are surprisingly few in number (economic crisis, political violence, loss of loved ones, severe pain and depression), possibly due to the power of a cognitive homeostatic mechanism, which we describe later in the paper. These phenomena also appear to be related and to cut across all levels (international, national, local), although their effects are experienced by individuals and their families.

The results give a mixed picture, and any interpretation can only be tentative, particularly where the aim is to integrate the findings with our definition of quality of life in order to propose an explanatory model and a general theory of quality of life. There are a number of reasons for this. First, very few of the studies we describe purported to measure quality of life in precisely the way we have defined it (although the work of Michalos (1985, 2004) comes very close).

[3] Davern and Cummins suggest that the observed influence of personality on QoL (or at least extraversion and neuroticism) is due to its link to 'core affect', which is at least partially biologically based and drives the homeostatic system (2005) and Russell, 2003).

A similar theory developed in health-related QoL ('Calman's gap' [Cella and Tulsky, 1990]) and formed the basis for the Patient Generated Index, an 'individualised QoL' measure, which was developed by one of the authors of this paper[4] (Ruta et al., 1994). Second, even for the other concepts such as wellbeing, no standard definitions were used consistently across studies, reflecting the infrequency of collaborations across countries or disciplines (Camfield, 2004). Third, study design, measurement techniques, the level at which the measurement was taking place, and methods of analysis also showed considerable variation, which is not surprising given the breadth of different disciplines and fields from which the studies were drawn, the lack of a clear and agreed understanding of the nature of many of the causal variables under investigation and the time span over which the work was undertaken. Perhaps the greatest challenge to interpretation however arises from the sheer scope and complexity required of a general theory. All these factors might seem to vindicate those 'impossibles' who counselled against even considering a general theory.

Yet some semblance of coherence may be discerned from the evidence presented, and the distinct, if embryonic, form of a unifying theory begins to emerge, when the data are re-examined through the lens of the definition of quality of life as the expectations-reality capability gap. A further building block for an emergent model is required however, which together with our definition, and Sen's original capabilities framework, bring the lens into sharper focus. It is a homeostatic mechanism for quality of life maintenance proposed by Cummins and Nistico (2002).

5.1. Building on the reality-expectations capabilities gap

The definition of quality of life as the gap between capability expectations and reality may be viewed as the final outcome of a causal pathway that begins with goods and resources and in which functionings/valued capabilities constitute the intermediate causal step (see Fig. 2). If one accepts, as discussed earlier, agency as an intermediate outcome and a particular vector of valued functionings, to be weighed against the other intermediate outcome and vector, wellbeing (a person's 'ability to do valuable acts or reach valuable states of being'), by the individual, for its relative contribution to their evaluative space, then the capability expectations-reality gap constitutes a hypothetically weighted index of wellbeing and agency. In moving from the first step in the causal pathway, the acquisition of some resource, good or commodity, through the causal sequence of events in which that resource is translated into certain functionings, which, if valued as capabilities, leads to the achievement of wellbeing and agency goals, culminating in a good quality of life, then one may be perceived to be progressing from the objectively to the subjectively measurable (see Fig. 2). The income available to an individual, for example, can be assessed objectively and quantified precisely in monetary terms and what that individual is able to be and do with that income is also objectively measurable, even if only in the 'inter-subjectively objective' sense proposed earlier. However, to move further along the causal pathway and make an assessment of valued capabilities and the gap between expectations and reality, requires, as we have argued earlier, a subjective and position-relative judgement if it is to have meaning and relevance for the individual whose quality of life is being assessed. As our review of the empirical evidence has illustrated, a simple linear correlation does not exist between the objective indicators

[4] The scope of the PGI was extended beyond healthcare with the development of the Person Generated Index (Ruta, 1998), which has recently been validated in Bangladesh, Ethiopia, and Thailand (Ruta et al., 2004).

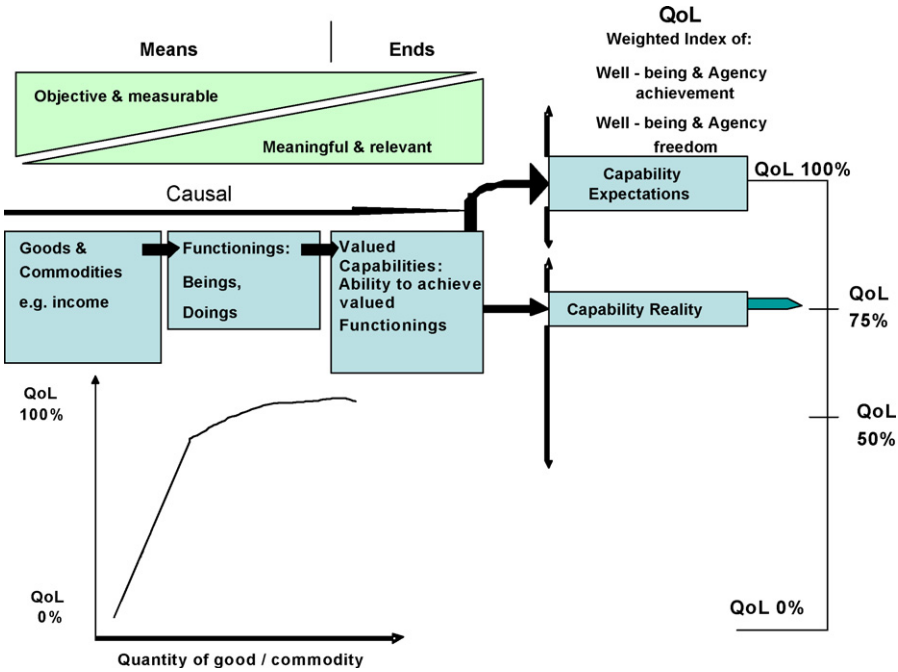

Fig. 2. A causal pathway from objectively measurable goods to subjectively assessed quality of life.

of goods and functionings, and the subjective indicators of valued capabilities and quality of life which goods and functionings produce. Indeed for the key goods and functionings such as income, health, and autonomy, a 'dose response' relationship is observed (Fig. 2) (see data from the World Values Survey, e.g. Inglehart and Klingemann, 2000).

5.2. *Introducing Cummins' 'cognitive homeostasis'*

Our empirical review findings are supported by a series of reviews of empirical studies conducted by Cummins (1996). Cummins analysed all published studies involving large western and non-western population samples in which respondents were asked some variant of the 'global' question 'how satisfied or happy are you with your life as a whole?'. Mean scores were calculated for responses to this question and standardised to a scale from a minimum of 0% to a maximum of 100%. They found that for western populations, observed mean life satisfaction was remarkably constant at 75% of scale maximum, with 95% of respondents' scores falling between 70 and 80%. For non-western populations the mean life satisfaction score was 70% of scale maximum, with 95% of respondents scoring between 60 and 80%. These findings, when considered alongside another review of studies undertaken by Cummins (2000), in which inter-correlations between objective and subjective measures of quality of life were examined, led him to develop a theory of homeostatic control for life satisfaction and subjective wellbeing:

> "(Life satisfaction) appears to behave as a variable held under some form of homeostatic control, in a manner analogous to blood pressure. However, while the latter is maintained in its normative range by associated autonomic devices, subjective wellbeing is maintained

by various cognitive devices that seem to certainly include a sense of control and positive cognitive biases." (Cummins, 2000).

Cummins conceived 'cognitive homeostasis' as an evolutionary survival mechanism allowing human beings to remain positive about themselves and their lives, to adapt to environmental and physical adversity and to resist the negative effects of psychological stressors such as anxiety and depression; in essence to retain sufficient psychological motivation to ensure species survival. The concept of cognitive homeostasis provides the final building block necessary to construct a second iteration that completes our proposed general model of quality of life. The analogy of a 'coiled spring' that connects capability expectations to reality is our interpretation of how cognitive homeostasis mediates the causal pathway linking resources (e.g. goods), functionings and capabilities to quality of life, the detail of which is not specified in Cummins' model.

The graph and causal pathway depicted on the left-hand side of Fig. 3 show how, as the quantity of a resource available to an individual to meet their basic needs (i.e. income) is increased from a theoretical start point of zero, their capability to achieve functionings that they consider valuable (in terms of their wellbeing and agency) initially increases linearly, with a steep gradient, bringing their perceived capability reality closer to their perceived capability expectations. The result is a narrowing of the gap between reality and expectations and thus an improvement in their perceived quality of life. The relationship between the quantity of available goods and commodities and

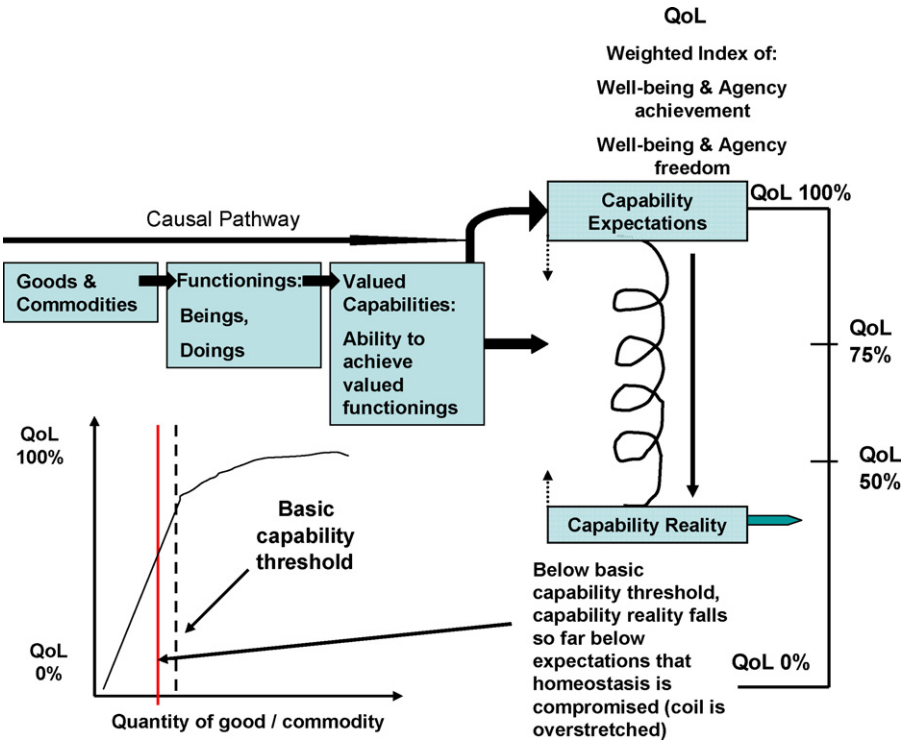

Fig. 3. Quality of life maintenance is compromised when availability of basic goods and commodities falls below basic capability threshold.

quality of life is thus depicted in the graph. It is important to point out here that a score of 100% does *not* indicate some absolute, universal maximum expectation, but *only* the current level of perceived capability expectations (i.e. perceived capability reality would be rated as 100% of scale maximum if reality matched expectations). It provides a *relative* reference point by which reality can be assessed as a percentage of scale maximum. Let us assume that in this example the increase in resources available to this person has not been sufficient to increase their perceived quality of life above 50%. At such low levels of availability of basic goods and commodities, the relationship between these objectively quantifiable variables and quality of life still shows a strong linear correlation with a steep gradient. This is because reality falls so far below expectations that the cognitive homeostatic mechanism, depicted in the model as a coiled spring, is compromised. Using this analogy, the spring is stretched to the point that it has lost the ability to recoil and pull perceived capability expectations down towards capability reality to the point that reality equilibrates again to 75% of scale maximum.

If capabilities cannot be raised to the level of the basic capability threshold (for example, through greater availability of resources), quality of life over the long term will not increase (all other parameters in the model being held constant, but see 'sustaining' and 'destabilising' variables below), despite the impressive human capacity for adaptation. However, when this basic capability threshold is passed (usually by increasing quantities of basic goods and commodities), the homeostatic mechanism begins to function again and is able to equilibrate capability expectations with capability reality.

The basic capability threshold is defined as the point above which the relationship between basic resources and quality of life ceases to be linear (i.e. the 'dose–response' curve begins to level off). Further increases in the quantity of goods and commodities and consequent increases in capabilities above this basic threshold will initially raise subjective quality of life above 75% (the figure Cummins identifies as the universal 'set point' for Subjective Wellbeing). However, this improvement is short lived as the homeostatic mechanism now operates to reduce perceived quality of life, regulating people's experiential 'temperature' so they become neither too 'cold' (depressed) nor too 'hot' (elated). Using the coiled spring analogy, the spring forces expectations to move away from reality to the point where the gap between the two equilibrates to around 25%, which enables people to return to the set point for subjective quality of life of 75%. This cognitive phenomenon has also been described as the 'hedonic treadmill' where no matter how happy you are, the happiness you desire is always just out of reach (Parducci, 1995). No further increases in the quantity of goods and commodities will be able to achieve any large lasting improvements in perceived quality of life; all other variables being held constant (Fig. 4). This leads us to consider how many of the other variables considered in our review of the empirical evidence can influence perceived quality of life under this model. A core set of subjective and inter-subjective variables identified in our review appear to act as *sustaining* variables, effectively re-calibrating the cognitive homeostatic mechanism so that it equilibrates at a perceived quality of life higher than 75%. These relate firstly to having positive human relationships, secondly to core personality traits such as extroversion and, finally, to experiencing life as meaningful, for example, through religious and traditional beliefs and practices. This selection parallels Cummins who identifies personality, meaning, spirituality, and 'sense of control'[5] as 'internal buffers'

[5] The relevance, or value, of a 'sense of control' to people in less developed countries is much debated. It may be better to replace it with Sen's concept of agency, which enables us to distinguish between, for example, the benefits of eating a nutritious meal provided by an NGO, and an equally nutritious meal prepared with vegetables from one's own field (thanks to Severine Deneulin for this example).

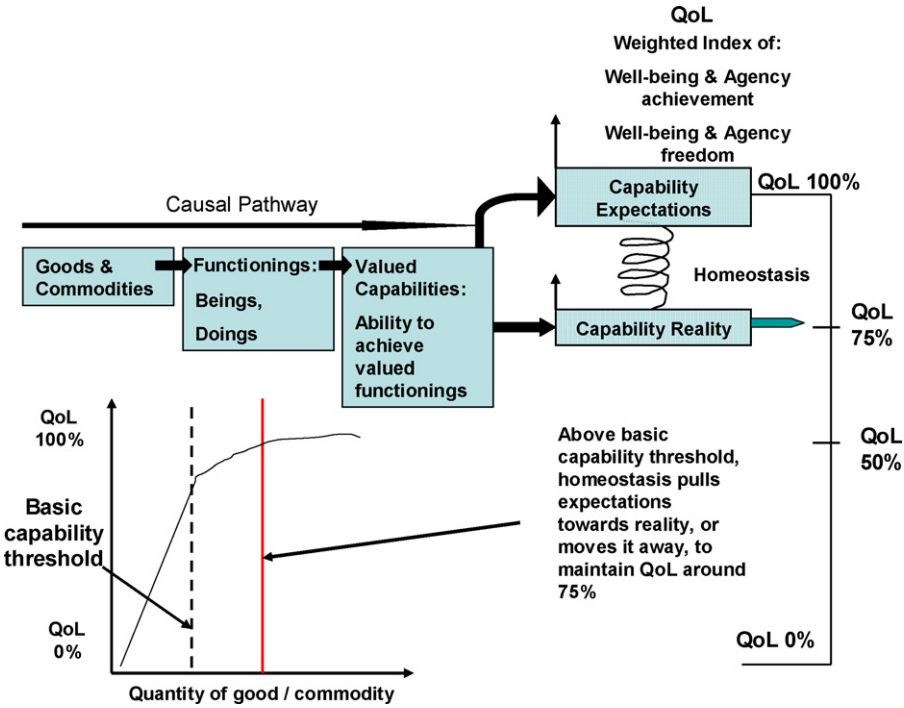

Fig. 4. Quality of life is maintained at around 75% when availability of goods and commodities raises capability reality above basic threshold.

(Cummins, 2005).[6] Using the coiled spring analogy, these variables serve to increase the tension in the spring. Not only does this have the effect of maintaining a narrower gap between capability expectations and reality, i.e. a higher perceived quality of life for a given individual with given resources over the long term, but it also renders the homeostatic mechanism less susceptible to compromise; in other words it lowers the basic capability threshold for that individual. Low levels of resources and environmental support that would defeat homeostasis in those individuals not well endowed with these sustaining variables, result in higher quality of life levels in those individuals in whom such sustaining variables are present in greater quantity (Fig. 5). In effect, sustaining variables like good relationships are 'instrumentally' valuable in that they both enable people to turn low resource endowments into greater material wellbeing than would otherwise have been possible and derive greater satisfaction from low resource endowments (e.g. Biswas-Diener and Diener's study of slum dwellers in Calcutta who derived great satisfaction from everyday pleasures like their food (2001)).

Our review also identified a core set of *destabilising* variables that exert the opposite effect upon the homeostatic mechanism. Loss of human relationships (for example, the death of a partner or child), chronic pain, which is often both severe and invisible to others, and depressive illness

[6] Our approach differs from Cummins in the emphasis he places on money as an 'external buffer', characterising it as a flexible resource, which can protect against many of the 'adverse environmental influences' that compromise homeostasis (2004). While this is undoubtedly true, our review demonstrated that it could not protect against the adverse events that have most impact on QoL, for example, loss of a loved one or social dislocation.

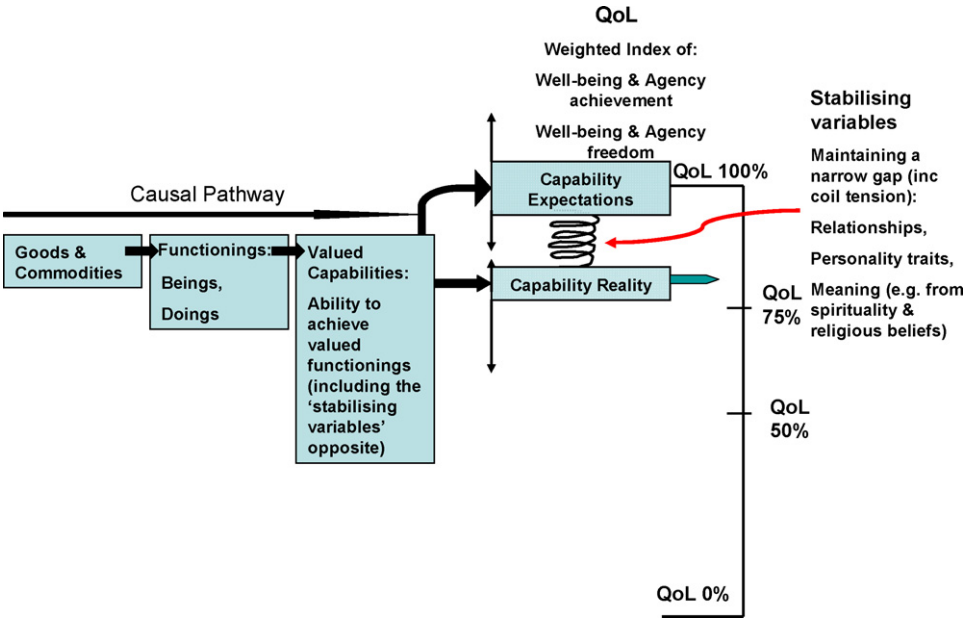

Fig. 5. Stabilising variables maintaining a narrow QoL gap and rendering homeostasis less susceptible to compromise.

(although the latter may be a consequence rather than a cause of poor quality of life) may have a powerfully disruptive destabilising effect on cognitive homeostasis, such that even the causal pathway itself becomes uncoupled from quality of life. Using the coiled spring analogy, the coil is distorted and stretched to such an extent that perception of capability reality and expectations are also distorted. The gap between the two becomes unnaturally large in the sense that it no longer bears any relation to levels of goods and commodities or objectively measurable functionings. In the extreme case, the gap between perceived reality and expectations becomes so wide that it is as if basic capabilities had fallen to catastrophically low levels, and life is perceived as no longer worth living (Fig. 6). These destabilising variables largely represent an inversion of the stabilising variables and also act as an antagonist to them. The interplay between the two will ultimately determine the overall effect upon cognitive homeostasis and perceived quality of life. Thus, for example, a deeply religious person, living at or below the basic capability threshold for all basic valued capabilities, and in a long-term and mutually supportive relationship, may consistently rate their quality of life as 65% or more, even in the face of severe chronic pain.

We would make two final comments on the proposed model before proceeding to examine its implications for policy development and evaluation. First, it is important to point out that the model does not specify which functionings, from an almost infinite capability set, should become the valued functionings that shape expectations. Neither does the model preclude certain variables from acting both in the causal pathway and as stabilising/destabilising variables. For example, being close to a loved one can be both a valued functioning and a stabilising variable. Second, it is important to note that as it stands, the model relates to the individual, and to individual quality of life, and cannot necessarily be applied at the level of society. This is despite the powerful mediating effect of the wider social and cultural environment upon the selection of valued functionings, the generation of capability expectations, and the particular stabilising and destabilising variables manifested in each individual. Our review of the empirical evidence begins to shed some light on

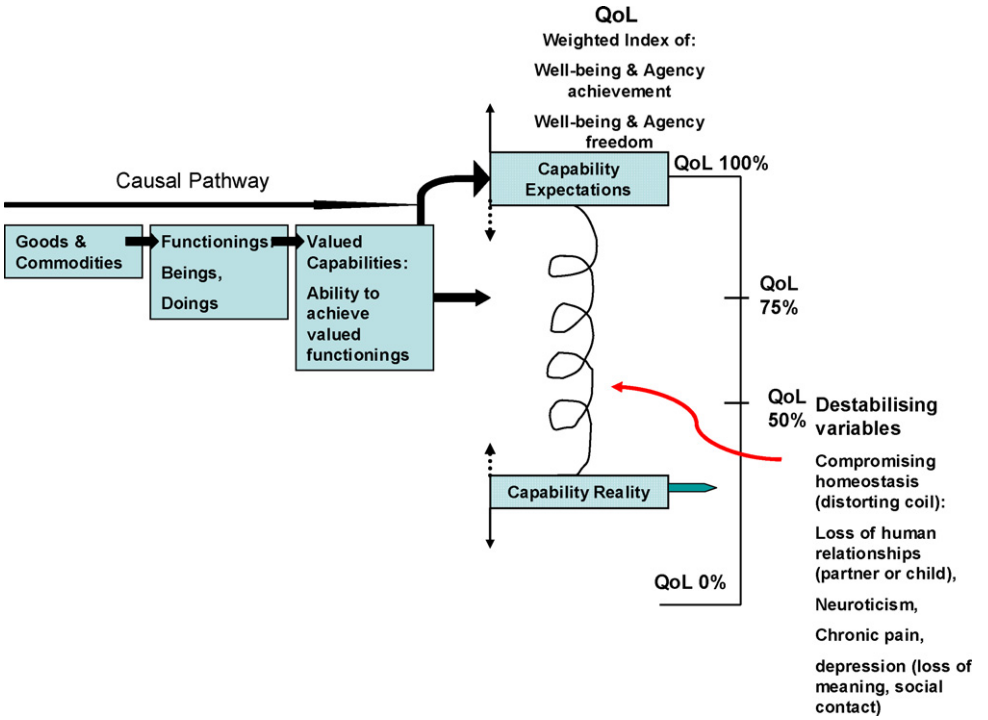

Fig. 6. Destabilising variables have a powerfully disruptive effect on cognitive homeostasis and distort perceptions of reality and expectations.

the nature of these influences, and it is almost certain that further refinement of this iteration of the model will be required as the theory is developed and tested.

6. Implications of the model for policy and distributive justice

In Section 1, we stated that a key aim of a general theory of quality of life must be to provide a meaningful contribution to the debate on distributive justice as a basis for social and economic policy. In this final section, we examine the extent to which our model lends support to Sen's argument that equality of basic capability, not equality of welfare or utility, or even equality of resources, should form the basis for a just distribution of resources, goods and commodities. A theory of equality of welfare or utility (or in the language of our model, quality of life) holds that a society treats people as equals when it distributes or transfers resources among them until no further transfer would leave them more equal in welfare or utility (or quality of life). The key objections to this interpretation of equality have been conveniently summarised as the 'offensive tastes' and 'expensive tastes' criticisms (Cohen, 1989); originally proposed by Rawls (1971) and later developed by Dworkin (1981a,b) and Scanlon (1975).

The offensive tastes argument contends that the welfare or utility a person derives in subjecting others to misery or slavery is morally indefensible and should not count towards any consideration of distributive justice (Rawls, 1971). The expensive tastes criticism makes the argument that it would be morally unjust for society to grant greater resources to an individual who threatens to become 'distraught without expensive wines and exotic dishes' over their neighbour who is quite

satisfied with 'a diet of milk, bread, and beans' (Rawls, 1982). In place of equality of welfare or utility, which its critics felt was severely limited by the problems of offensive and expensive tastes, a system of distributive justice based on the notion of equality of primary goods (Rawls, 1971), resources (Dworkin, 1981a,b) or 'needs satisfiers' (Doyal and Gough, 1991) was proposed. This theory of *distributional equality* holds that society treats people equally when it distributes primary goods or resources so that no further transfer would leave their total share of primary goods or resources more equal. Despite the appeal of this theory, it raises the question of who decides what the 'primary goods' are, or, if we say that primary goods are the resources that satisfy people's basic needs, how we then decide on the content of the basic needs.

This is why Sen's approach is more satisfying as, while agreeing with critics of the equality of welfare or utility theory, Sen pointed out that resources are not desired for their own sake; they are the means by which individuals are able to pursue valued doings or beings. They also observed that the conversion of people's resources into, what they subsequently termed, basic capabilities, 'may vary greatly between individuals and also between different societies, so that the ability to reach minimally acceptable levels of basic capabilities can go with varying levels of minimally adequate (resources)' (Sen, 1993). This led him to propose that equality should focus on the equal distribution of basic capabilities. Sen acknowledged however, that 'as long as minimal capabilities can be achieved by enhancing the income level (given the other personal and social characteristics on which capabilities depend), it will be possible (for the specified personal and social characteristics) to identify the minimally adequate income for reaching the minimally acceptable capability levels' (1993).

Our general model of quality of life, as we have seen, places Sen's functionings/capabilities midway in a causal pathway linking basic goods and commodities on one side, to quality of life (as the capability expectations-reality gap) on the other. The complete model, in which cognitive homeostasis combines with various sustaining and destabilising characteristics, within a wider social and cultural environment, produces a non-linear relationship between goods/commodities and valued capabilities (and hence quality of life). It also identifies a basic capability threshold as the point at which the relationship between basic resources and basic capabilities/quality of life ceases to be linear, i.e. the dose–response curve begins to level off. Thus, in our view, this general theory of quality of life supports the criticism of equality of welfare/utility as a basis for distributive justice on the grounds that once resources have been transferred to an individual to the point that, given their specific personal and social characteristics, their basic capability threshold has been reached, priority should then be given to taking other people to their threshold. Indeed a re-distribution of resources from those above the capability threshold to those below is warranted according to the model. At the same time the model rejects a distributional theory based on equality of resources and supports an equality of basic capabilities approach. It demonstrates quite clearly how the correspondence between primary goods/resources and valued capabilities, except at or just below the basic capability threshold (the focus for the majority of studies of poverty), cannot be predicted by a simple linear correlation. Even where the availability of goods/resources to an individual is extremely low, the model shows how the precise shape of that dose–response curve for that individual can be changed by a combination of personal, social and cultural factors, which influence capability expectations, the mix of sustaining and destabilising variables unique to an individual and act upon the homeostatic mechanism. Sen has already argued that in characterising poverty, 'what is really important is to take note of the interpersonal and inter-social variations in the relation between incomes and capabilities. That is where the distinctive contribution of the capability approaches to poverty analysis lies' (1993). Our proposed general model of quality of life serves to reinforce that contribution and at the same time permits an integration

of the capability approach with the body of available empirical evidence on quality of life and wellbeing.

7. Implications of the model for policy evaluation

Our proposed model has implications for policy that extend beyond considerations of distributive justice; it suggests a methodology for policy evaluation, including some insights into the debate on assessments of valued capabilities in objective/ subjective and/or universal/ relative terms. In order to subject our proposed theory to empirical testing, it would first be necessary to develop a measure of quality of life conceptually derived directly from the model, and to relate the scores on such a measure to the other variables specified in the model in a series of intra- and inter-national population studies. This would require the administration of an instrument designed to allow the respondents in such studies to:

- specify those capabilities that they value most (whether related to wellbeing or to agency achievements);
- rate the extent to which reality departs from expectations in each of those valued capability domains, including a rating of their perceived freedom to achieve these capabilities; and finally
- weight the relative importance of those valued capabilities in order to generate a single index of quality of life.

The resulting measure would then serve not only to confirm the model and validate the theory, but could also be used to evaluate the overall quality of life impact of policy interventions in any number of policy arenas. Two of the authors are developing such a measure, based on the 'Global' Person-Generated Index (PGI) of Quality of Life (Ruta et al., 2004). The PGI approach to individual quality of life assessment was originally developed in the field of medical care (Ruta et al., 1994). Preliminary validation studies in rural and urban populations in Ethiopia, Bangladesh, and Thailand, using both quantitative and qualitative validation methods, have provided promising results for the PGI, and data collection is now ongoing in these countries that will allow many, but not all components of the model to be tested (Fig. 7).

A quality of life instrument consistent with our proposed model, such as the PGI, will not be of direct relevance to the measurement of basic capabilities (the basis of decisions about the fair distribution of resources according to Sen's notion of distributive justice). Such an instrument would provide a measure of valued capabilities; however this information on its own cannot indicate whether, for that valued capability, the basic threshold level of capability has been reached. Nor does it give any indication of the level of goods/resources required to enable that individual to reach that threshold. If the relationships between all variables in the general model were known, then for any given individual, it would be possible to predict the level of primary goods/resources necessary to attain the basic capability threshold for the valued capabilities identified. Naturally, this would also involve ascertaining the extent and nature of the other sustaining and destabilising variables present in that individual, and adjusting for their cultural and social context.

This opens up at least two possibilities for using our general model of quality of life to evaluate policy. First, one can envisage a theoretical scenario in which, by measuring all the variables in the model (subjectively and objectively as appropriate), the level of resources necessary to reach the basic capability threshold is determined individually for each citizen. Using this information, resources are then allocated to each individual to the amount specified by

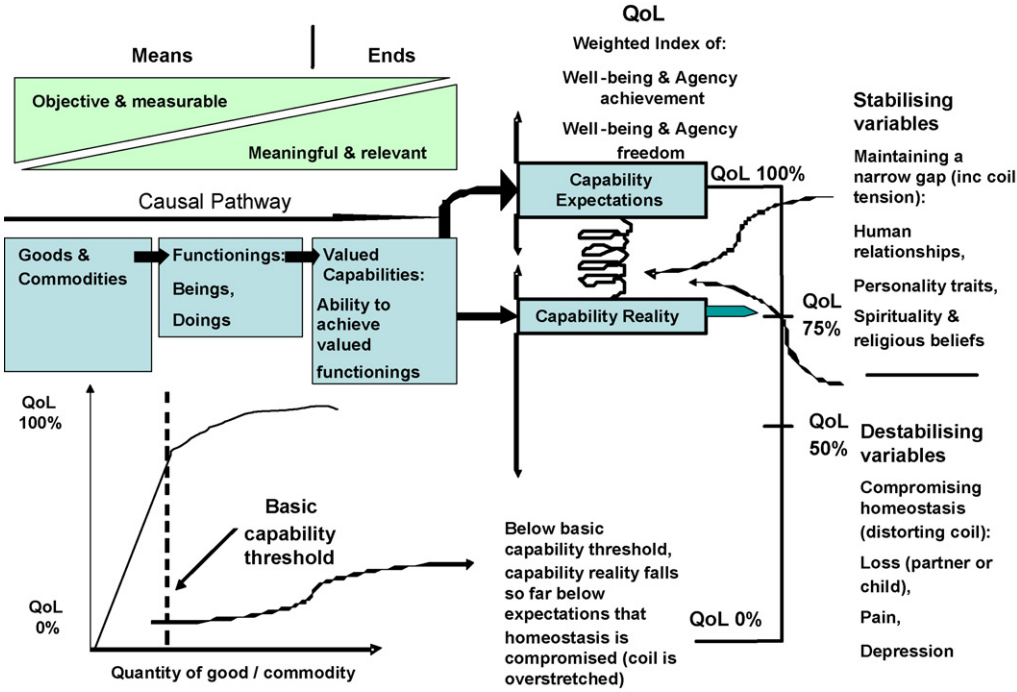

Fig. 7. A general model of quality of life.

their personal threshold for basic capabilities or needs, i.e. relative to their own subjectively valued capability expectations (constrained of course by the need to manage scarcity and achieve efficiency). In a second scenario, measurements are still made of individuals as in the first scenario. This time however, the basic capability information derived from individuals is used at a population level. The distribution of resource levels at which the basic capability threshold is reached is described for the population as a whole, and is used to form a collective view about the minimum level of resource to be allocated to each individual to ensure equality of basic capabilities or needs in that society. Society may choose a level of resource that reflects the population mean, i.e. the level of resources that would allow the average citizen to reach their capability threshold, or it may choose another level, for example, one that would allow every individual, or the majority of individuals, to reach their threshold (again constrained by the same considerations of resource scarcity and a societal desire to maximise efficiency). Thus, in this second scenario, by combining individual assessment with collective 'value deliberation', our model is partially able to reconcile subjective and relative approaches to defining basic capabilities or needs with objective and universal ones. Whichever level of resource is chosen, the inter-individual variation predicted by the model means that some individuals are likely to receive fewer resources than they require to reach their own personal basic capability threshold, while others will receive more resource than they require. This is the inevitable trade-off that results when a collectively agreed level of basic capability is chosen over an individually determined level through the process of 'value deliberation' described above. Yet it presents no greater moral challenge to social policy than the trade-off between efficiency and equity.

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