

II) Multidimensional Poverty: The Domain of Analysis

The Capability approach

Sabina Alkire

Abstract.

Amartya Sen's capability approach advocates the expansion of people's freedoms, of their valuable capabilities. Empirical measures relate to the capability approach insofar as they provide information by virtue of which social arrangements might be usefully evaluated, capability poverty might be reduced and valuable capabilities might be expanded. The capability approach can add clarity regarding the insights that alternative measures – and indeed alternative categories of information – can bring to bear, and the oversights such measures contain.

After locating the topic of multidimensional poverty with respect to the capability approach, this paper addresses two central issues. First, if multidimensional poverty measures are used to represent capability poverty directly, how can the relevant domains for a particular exercise be identified? Further, how can direct multidimensional poverty measures give adequate consideration to people's freedoms, which form a constitutive component of the capability approach? In addressing these questions the paper draws on some empirical work which has advanced the measurement of capability.

Normative framework, technique, and method

At its base, the capability approach is a normative framework for assessing alternative policies or programs or options – whether in welfare economics, development, or poverty reduction. It proposes that social arrangements should be primarily evaluated according to the extent of freedom people have to promote or achieve functionings they value. While the capability approach identifies a space for evaluations, additional principles or procedural considerations such as equity, efficiency, sustainability, voice and participation, as well as additional information, for example pertaining to human rights and responsibility, would be considered in an evaluation that fully reflects the capability approach as it has been developed within Sen's other writings on rationality and freedom.¹

The reason to introduce the capability approach in this way is to note that it does not *compete* with the techniques by which domains of interest may be identified, or kinds of data for multidimensional poverty comparisons. The capability approach can be advanced by quantitative, or qualitative, or participatory, or subjective data. Furthermore, it has considerable overlap with participatory methods, with the concern to advance empowerment, as well as more well-known indices and indicators.

However a normative framework can be and, it is expected, will be applied differently depending for example on the place and situation, the level of analysis, and the kind of decision involved. Thus if one expects the capability approach to generate a specific and distinctive set of domains for all evaluative exercises, or to generate a specific and distinctive

¹ Robeyns, I. (2000). An Unworkable Idea or a Promising Alternative? Sen's Capability Approach Re-examined. , Sen, A. (2000). "Consequential evaluation and practical reason." Journal of Philosophy **97**(9): 477.

methodology by which to understand the domains of poverty a particular groups values (as participatory methods do), one is bound to be disappointed. This paper will indeed propose a set of domains, and discuss the process by which to select the relevant domains for a particular exercise. But no one set of domains, or combining techniques, or levels of analysis will be sufficient. What the capability approach can offer, fundamentally, is a framework of social welfare, which can be filled in in many interesting and varied ways, and with respect to which various research and policy questions can be analysed. Just as utilitarianism underlay social welfare functions based on consumption data, the capability approach together with the wider ethical economic rationality it entails can provide unity and coherence to the project of reducing the multiple deprivations which so many suffer.

The context of multidimensional poverty assessments: capabilities, welfare economics, and information

Sen's capability approach was articulated with respect to welfare economics. By the late 1940s so-called 'new' welfare economics had been reconfigured, first by Robbins' rejection of interpersonal comparisons of utility ("Every mind is inscrutable to every other mind," he argued²) and subsequently by Samuelson's revealed preference theory, both of which greatly reduced the information representing people's utility in the social welfare function. Shortly thereafter, Arrow's impossibility theorem (1951) raised fundamental questions regarding the rules by which systematic social welfare judgements were made. Sen wrote that "the most likely route of escaping the Arrow dilemma in making social welfare judgements lies not in any marginal modification of one of the Arrow axioms, but in the general direction of enriching the informational input into that analysis."³

Sen also observed that conditions widely used to obtain economic results – such as the Pareto principle(s) in welfare economics, Kenneth Arrow's social choice condition of the independence of irrelevant alternatives, or Kant's categorical imperative – functioned in part by *excluding* various categories of information from consideration. "The basic form of an informational constraint is that of an invariance requirement: if two objects x and y belong to the same *isoinformation set* I , then they must be treated in the same way J . For all $x, y: x, y \in I \Rightarrow J(x, y)$."⁴ The exclusion of information is necessary and indeed any theory of justice, such as those proposed by Rawls, Dworkin, or Nozick, has a limited informational base.⁵ Sen drew attention to the informational constraints of contemporary welfare economics, however, because he argued that these excluded kinds of information that *should* be considered.

Measures of capability represent one route by which to enrich the information that is considered both in general and with respect to poverty. At very least, the capability

²Robbins, L. C. R. (1932). An essay on the nature & significance of economic science. London, Macmillan & co., limited.

³ Sen, A. (1996). On the foundations of welfare economics: utility, capability and practical reason. F. Farina, F. Hahn and S. Vannucci. Oxford, Clarendon Press.

⁴ 1985a:170 – the subject of the first Dewey lecture is 'Moral Information' and is a particularly lucid account of our subject. See {Sen, 1974 #1036}{Sen, 1979 #203}{Sen, 1982 #196}{Sen, 1992 #541}{Sen, 1995 #244}

⁵ Sen 1992a:74

approach is the proposal that the measurement, comparison, and evaluation of well-being or poverty (both of which are multidimensional) should occur in the space of capabilities (rather than utility or resources), or in some feasible approximation of capabilities such as a vector of achieved functionings or an index. Implementing the capability approach requires techniques for identifying, prioritizing, measuring, and comparing capabilities in many different situations. Measuring welfare in the space of capabilities rather than income or utility thus could enrich the informational base of social welfare assessments, as could the introduction of non-measurable considerations.

The choice of *indicators* to represent each domain is obviously a separate topic upon which many have written, so is not considered here. The focus of capability measures is to assess people's lives; thus conceptually preference is given, where feasible, to indicators of 'functionings' such as being nourished, or being educated, rather than to indicators of commodities, resources, income, or, in most cases, access to services.

Yet information on a vector of capabilities is not sufficient for an evaluation of social welfare. Welfare assessments also require the comparison of alternative distributions of capabilities, and perhaps demonstration of the value-added of capability analysis in comparison with an analysis based on utility, income or resources. When tracing through these informational requirements it becomes evident that coherently implementing the capability approach entails a wider rationality than so-called 'economic rationality.'

Indeed in the 1985 Dewey lectures and subsequently, Sen has argued for an approach to welfare economics which takes into account further information of two kinds. "One is in terms of plurality of principles (I shall call this *principle pluralism*), and the other in terms of plurality of informational variables (to be called *information pluralism*)."⁶

In principle pluralism, the objective of expanding capabilities for all persons is coherently situated within a wider system of thought (indeed an ethical rationality⁷) that includes considerations of efficiency, equity and sustainability, rules of aggregation, the need for value judgments, the desirability of an exercise of agency and public reason, respect for human rights, consideration of who must take responsibility for an action and so on.⁸ While this paper will focus on the identification of multidimensional capability poverty, it may be important to note at the outset that this is not the only information that may be relevant to multidimensional poverty comparisons. Indeed shifting the focus of poverty measurement to a multidimensional vector has implications for the entire framework of assessment. This is particularly the case if the identification of poverty is partially undertaken or revised in a participatory manner, rather than emerging solely on the basis of data availability or the views of poverty experts.

Research on Capability measurement

Research underlying the empirical measurement of capability for welfare or poverty reduction exercises is strongly increasing. For example considerable work is occurring in:

⁶ 1985a:176

⁷ {Sen, 1987 #66}

⁸ {Sen, 2000 #169}

- Vectors of non-income or non-utility measures ('functionings')⁹
- Fuzzy Set theory to represent the ambiguity that is inherent in the selection of poverty thresholds, of relevant domains, and of time (for example)¹⁰
- Latent variables (using structural equations, factor analysis, principle component analysis etc)¹¹
- Empowerment and the measurement of agency freedom and opportunity structures¹²
- Participation and the identification of valuable capabilities and measures.
- Multidimensional poverty comparisons using non-income data (counting, index, stochastic dominance)¹³

This paper cannot consider most of this literature and instead focuses narrowly upon the selection of domains.

Domains of Poverty and well-being

The capability approach emphasizes the objective of *expanding* freedoms and, conversely, of reducing capability poverty. So, to state the obvious, multidimensional poverty measures relate to the capability approach insofar as they provide information by virtue of which poverty might be reduced more accurately. Thus what is needed is not a quixotic search for the perfect set of domains but rather domains and corresponding measures – and indeed other categories of information – that are sufficient to guide multidimensional poverty reduction efforts to their objectives.

“In the context of some types of social analysis, e.g. in dealing with extreme poverty in developing economies, we may be able to concentrate, to a great extent on a relatively small number of centrally important functionings and the corresponding basic capabilities (e.g. the freedom to be well nourished, well sheltered, and in good general health, the capability of escaping avoidable morbidity and premature mortality, the ability to move about freely, and so forth). In other contexts, the list may have to be longer and more diverse.”¹⁴

Value Judgements

What are the considerations by which domains can be identified and selected? The fundamental consideration is that the domain be valuable – for capabilities are the freedom to achieved beings and doings that people value and have reason to value. A

⁹ Alkire 2005, Anand et al 2004, Anand 2004. Anand and Sen 1997. Atkinson 1999, Balestrino 1991, 1994, 1996, 1998; Balestrino and Sciclone 2001; Balamoune-Lutz 2004; Betti and Verma 1998; Burchardt 2003, Chakraborty 1996; Clark forthcoming, Clark and Qizilbash 2002; Desai 1995; Fleurbaey 2002, Fukuda-Parr and Kumar 2003; Kamath 2000; Khare and Tripathi 2000; Majumdar and Subramanian 2001; Qizilbash 2002, 2003a, 2003b; Ruggeri Laderchi 1997, 2004.

¹⁰ Cerioli and Zani 1990, Cheli and Lemmi 1995; Chiappero-Martinetti 1994, 1996, 2000; Chakravarty 2005,

¹¹ Krisnakumar 2004 and this conference; Balestrino and Sciclone 2001; Klasen 2000, Kuklys 2002, 2003; Lelli 2001; Schokkaert and Van Ootegem 1990.

¹² Surveys are found in Alsop and Heinsohn 2005, Malhotra et al 2002, Narayan 2005, and Roy et al 2004.

¹³ Leander and Alkire 2005, Anand and Sen 1995, 1997, Atkinson 1987, 1989, 1999, 2003, Bourignon and Chakravarty 1999, 2002, 2003, Duclos Sahn and Younger 2003, Fisher 1956, Foster and Shorrocks 1988a,b, Hahn 1971, Kolm 1976, 1977, Maasoumi 1986, Maggio 2004, Mukherjee 2001, Tsui 1999, 2002.

¹⁴ Sen in Farina p 57-58

great deal of attention has been placed on how to determine value, who determines value, and how to resolve conflicting value claims. For the purposes of this discussion, the most salient point to notice is that if the domains included in a comparison are intended to represent a community's wellbeing and to be used for policy purposes, then these domains should be able to be critically examined and challenged by the community on an ongoing basis, and amended if they fall short. This implies an ongoing democratic and/or participatory process.

In the democratic context, values are given a foundation through their relation to informed judgements by the people involved...It is not so much a question of holding a referendum on the values to be used, but the need to make sure that the weights – or ranges of weights – used remain open to criticism and chastisement, and nevertheless enjoy reasonable public acceptance. Openness to critical scrutiny, combined with—explicit or tacit—public consent, is a central requirement of non-arbitrariness of valuation in a democratic society.¹⁵

When participatory processes are not feasible, perhaps because of the need for comparability, still some attention must be given to empirical sources of information on values, such as participatory poverty assessments or values surveys.

Purpose of the Evaluation

Second, in practice key capabilities must be specified, and can be ranked or prioritized from more central to more trivial, but Sen among others has argued consistently against the specification of one 'canonical' list of capabilities for a number of reasons.¹⁶ Sen argues repeatedly against the specification of one set of domains of capability poverty for all evaluative exercises. One reason is that this might impose one view of the 'good life' whereas valued capabilities and priorities differ across people and societies and a core human freedom is the freedom to make these value judgements. Another reason is that often, the capability approach can generate value added in comparison with narrower approaches such as an income-based approach even without a full set of capabilities – as the HDI and similar measures demonstrate. Thus the purpose of the evaluation, its audience, and the data available, will and should also shape the identification of capabilities¹⁷ Third, Sen argues that the process of selecting the capabilities, for example by public debate, may be valuable in itself.

Feasibility

Third, as Anthony Atkinson noted, Sen “seeks to make constructive progress – to see what economists can do.”¹⁸ Similarly, it may be quite important to make use of measures that are deeply flawed but are nonetheless superior to the mainstream, such as the HDI was in its time.¹⁹

¹⁵ Sen 1997 [*On Economic Inequality*] p 206

¹⁶ For a fuller account see Alkire 2002a, Ch 2 section 1.

¹⁷ Sen [VF refs] 1993a:48, see 1995c:266f, 1999a Chapter 3

¹⁸ {Atkinson, 1999 #240} p 174

¹⁹ Asali, Reddy and Visaria [this conference] use an income-based food energy index and call it a capability poverty measure, presumably on these ground. Similar work was done by Ruggeri-Laderchi in Peru, and Ruggeri-Laderchi, Saith and Stewart in *Oxford Journal of Development Studies*.

Indeed the grounds by which to decide upon the domains and indicators include feasibility. Most or even all empirical outworkings of the capability approach have used drastic simplifications, and these are to be cheered and heralded as true advances, at the same time that their limitations must also be borne in mind. “In all these exercises clarity of theory has to be combined with the practical need to make do with whatever information we can feasibly obtain for our actual empirical analyses. The Scylla of empirical overambitiousness threatens us as much as the Charybdis of misdirected theory.”²⁰

The primary concerns in the selection of domains are that they be things people value and have reason to value, that they be appropriate to the purpose of the evaluation, and useful. It may be worth noting explicitly, if only to counter already published misunderstandings, that the domains of interest extend beyond health and education. Capability is *not* equivalent to the inclusion of health and education indicators in multidimensional analyses. It is more than this. Deprivations with respect to health and education are indeed core elements of poverty, and have been recognized by participatory, social exclusion, capability, and income approaches among others. Furthermore, the Human Development Index and the Human Poverty Index give prominence to health and education, and because both indices arose in order to contrast the capability approach with the income-based approach, they are rightly associated with the capability approach. However they were also shaped by feasibility considerations, including constraints on internationally comparable data, and the need to be terribly comprehensible to policy makers. Health and education do not exhaust the domains of capability poverty that are relevant to most multidimensional poverty assessments.

Dominance Partial Ordering

Furthermore, Sen argues that partial orderings of options may be sufficient in many situations, and may be preferable because they can reflect the diversity of value judgements at play in a given society. If certain capabilities are widely regarded to be valuable (such as being able to be nourished, to enjoy a basic education, to walk about without shame), then even if there is substantial disagreement as to the relative weights to assign to of the capabilities (and less consensus on other capabilities that might be relevant), reducing deep deprivations in any of the identified capabilities would be an improvement.²¹ Dominance partial ordering is one way in which perhaps quite substantial agreement might be reached on issues without requiring any agreement on relative weights. Dominance partial ordering may be extended to order a particular pair of valuable objects, if the range of different people’s relative weights for the objects is known. Similarly, dominance partial ordering may be extended to order ratios of value objects by considering not relative weights, but indifference curves or surfaces (which need not be complete), and by evaluating the relative merit of value-object-combinations by their placement vis-à-vis the indifference surfaces. The dominance approaches for multidimensional poverty comparisons used by Duclos and Sahn, Bourgignon and

²⁰ Sen, 1985, *Commodities and Capabilities*, p 49.

²¹ 1992a:46 see 1985b:35-37, 1999a:78-79

Chakravarty among others demonstrate the relevance of this consensus-based ranking process.

How to Select Domains:

Thus rather than proposing a set of ‘canonical’ domains to characterize the capability approach, most authors have proposed that the identification of domains follow certain criteria. I will present here several options:

- Iterative and participatory processes*
- Empirical or Philosophical Bases*
- Procedural criteria*

Iterative and Participatory Processes

Building on the work of David Wiggins as well as Sen, I have argued that, in the case of vitally important functionings (or basic capabilities, or needs), an iterative process is required in order to identify the appropriate domains and, within the domains, the appropriate specific indicators or activities to pursue.²² For even in-country activities of small to medium scale require considerable attention to value judgements, given that there may be conflicting priorities between different sub-groups.

To advance basic capabilities (or the capabilities to meet basic or vital needs) requires a sequence of activities such as:

- a) articulation of general domains or goals of special importance and social influencability²³
- b) identification of long term valued capability goals and strategies for the community of interest (i.e. using participation)
- c) establishment of vital needs that seem feasible and instrumental to these goals in the short term for the community of interest
- d) implementation of a strategy such that negative freedoms are safeguarded and the goals and strategies can be influenced by public debate in an ongoing iterative manner
- e) mitigation of (especially vital) capability contraction that occurs either among the community of interest or among other groups, while meeting vital needs. This may require attention to externalities.

Empirical or Philosophical Bases

At the same time, the task of explicitly formulating and justifying a set of domains can be made more efficient by considering the empirical and philosophical work on domains that has originated in various disciplines including quality of life literature, cross-cultural psychology, philosophy, social indicators, and other areas.

[T]he question of identification of functionings has to be supplemented by that of their valuation. It should be obvious that the valuation exercise can offer a considerable role to the method of the questionnaire. The problem, however, is made a good deal more complicated by the fact that questions of valuation are often hard to pose, and harder to answer, and also by the fact that the need for

²² Alkire, 2005, “Needs and Capabilities” see also *Valuing Freedoms* Ch 5

²³ See Sen 2004 “Elements of a Theory of Human Rights” PPA

cool and non-mechanical reflection on these issues is not easy to fulfil. I have, I fear, no magic solution to offer in dealing with these complex questions, but no matter what compromise solutions we arrive at for our practical exercises, the exacting requirements of a satisfactory solution have first to be recognized.²⁴

Key resources relevant to multidimensional poverty include participatory poverty assessments at the regional and national level, and synthetic studies such as *Voices of the Poor* at the international level.²⁵ Another resource is the *World Values Survey* and related empirical work on cross-cultural values²⁶ – the problem being that in its current structure, respondents to these questionnaires are unlikely to be the poor, although there are some exceptions.²⁷

One approach to identifying relevant domains, that interfaces well with Sen's capability approach, involves a set of vague dimensions of human development. Earlier, following the work of John Finnis, I have referred to dimensions of human development as being "*nonhierarchical, irreducible, incommensurable and hence basic kinds of human ends*". Dimensions do not derive from nor divide up an idea about what the good life is, but rather are values or "reasons for action" which people of diverse cultures, geographies, and value orientations could recognize.

While there need be no authoritative list of these dimensions – nor a definitive number, or nomenclature, for the dimensions – nevertheless, some mental checklist of the categories of human purpose that many different cultures find to be central to well-being, or its lack to constitute poverty. Furthermore, even though it seems esoteric, having a firm epistemological foundation for these dimensions is important in economics also

Finnis suggests that the question "why do I/others do what we do?" when asked repeatedly by any person or group, leads to the recognition of a *discrete heterogeneous set of most basic and simple reasons for acting which reflect the complete range of human functionings*. Finnis and colleagues over 30 years have suggested what that list might look like and also have suggested how others might modify or improve the list. Participatory in development as well as in other areas have used versions of their work (reprinted below).²⁸

²⁴ Sen 1985 *Commodities and Capabilities* at p 48

²⁵ The *Voices of the Poor* list is reprinted on page

²⁶ {Inglehart, 1997 #421}{Inglehart, 2000 #863}{Schwartz, 1992 #658}{Kahneman, 1999 #868}

²⁷ {Biswas-Diener, 2001 #305}

²⁸ Alkire 2002, Iguíñez and Mejía 2004 et al

Dimensions of Poverty or Human Flourishing

Life - survival, health, and reproduction.

Knowledge including understanding, education, and also aesthetic experience.

Meaningful Work and Play

Friendship and other valued kinds of human relationships

Self-Integration (inner peace)

Authentic Self-Direction (participation, self-determination, practical reason)

Transcendence 'peace with God, or the gods, or some nontheistic but more-than-human source of meaning and value.'

The use of this or other relatively complete accounts of multidimensional poverty (see Tables 1-5) will be important to use mostly when it is important to have a relatively complete account of poverty and well-being. However they may be of more general use also. Although some domains (such as friendships, or transcendence) are not usually considered relevant to poverty reduction and may not be amenable to measurement, in some cases it may be crucial to acknowledge these domains in some way because *resistance* to poverty reduction initiatives may stem from perceptions of a trade-off between poverty reduction and cultural or social or religious values.²⁹

Procedural Account

However the list is generated – whether through participatory exercises, empirical study, or another manner (including data availability) – what is clear is that the domains should be, to some extent, open to public scrutiny and ongoing debate. To this end, Ingrid Robeyns has proposed four procedural criteria that authors use when identifying the relevant domains and capabilities. These are reprinted with minor clarifications:

1. *Explicit formulation*: the list [of domains and/or capabilities] should be made explicit, discussed and defended: why it is claimed to be something people value and have reason to value.
2. *Methodological justification*: The method that has generated the list should be clarified and defended (and open to critique or modification). For example, whether this domain was chosen on the basis of a participatory exercise, or through consultation of empirical studies of human values.
3. *Two stage process: Ideal-Feasible* : If a set of domains aims at an empirical application or at implementable policy proposals, then the list should be drawn up in at least two stages. Each stage will generate a list at a different level, ranging from the level of ideal theory to more pragmatic lists. This means that only from the second stage onwards will constraints and limitations related to the measurement design and data collection, or to political or socio-economic feasibility in the case of policy-oriented applications, be taken into account. Distinguishing between the ideal and the second-best level is important, because these second best constraints might change over time, for example as knowledge expands, empirical research methods become more refined, or the reality of political or economic feasibility changes.
4. *Exhaustion and non-reduction*: the capabilities on the [ideal] list should include all elements that are important: no dimensions that are relevant should be left out. For

²⁹ Walton and Rao, *Culture and Public Action*.

example, those capabilities related to the non-market economy should also be included in economic assessments.³⁰

The advantage of such explicit is that it enables technical artists of multidimensional poverty comparisons to prevent the use of a more ‘data-driven’ experimental exercise, for example, as policy advice that reflects the well-being of the relevant community.

Domains and Freedom

According to Sen’s capability approach, economic and social arrangements should be evaluated in terms of the *freedoms* enjoyed by those who live in them. More desirable social arrangements enhance people’s freedoms to a greater extent. But how can empirical poverty measures assess the impact of alternative courses of action on multiple human freedoms? However intriguing or even compelling notions of freedom may be conceptually, many current measures fall short, by self-admission, of capturing the freedom distinctive of Sen’s approach.³¹ Nor have alternative empirical methods for incorporating measures of freedom into multidimensional poverty comparisons been developed. However a fully developed multidimensional poverty vector would need to incorporate freedom, or else to argue why the indicators of functionings were sufficiently basic to be also indicators of capabilities (such arguments have been made, for example, in regards to live expectancy and nutritional status).³²

Freedom can be incorporated either through using some measures of access to services, to indicate opportunity freedom, or else by using domain specific measures of agency.

Some empirical work has indeed tried to capture capability rather than functioning poverty, and to introduce the notion of freedom.³³ The largest present literature on this is that on empowerment – and particularly the approaches that seek to measure both opportunity structure and agency.³⁴

I have argued that the appropriate measures of agency or autonomy are those which consider agency with respect to each domain of a multidimensional comparison rather than as a global dimension that can be isolated from other dimensions.³⁵ Thus I argue that autonomy or process freedoms must be evaluated with respect to each basic functioning. The reason for this is that the autonomies required for a woman to decide to seek paid employment, to be nourished, to plan her family, to vote, to attend literacy courses may be present in varying degrees and it is precisely these variations that may identify the ‘freedom’ associated with a particular functioning or a particular deprivation: a woman

³⁰ {Robeyns, 2003 #512}

³¹ It must be stressed from the outset that a number of authors advocate freedom and opportunity to be a central component of welfare evaluation. See also Arneson 1989, Cohen 1989, Daniels 1990, Nozick 1974, Mill 1859, Rawls 1971, Raz 1986, Roemer 1998, 2002 and Sugden 1998 among others.

³² Sen with Foster 1997 *On Economic Inequality* Appendix; see also Drèze and Sen 1989, 2002, x

³³ Burchardt, Tania 2001. Jaya Krishnakuma 2004 and this conference.

³⁴ Alsop, Ruth and Heinsohn, Nina 2005 “Measuring Empowerment in Practice” *World Bank Working Paper*; Narayan, Deepa, Ed 2005 *Measuring Empowerment* especially chapter by Michael Walton, Alkire “Measuring Freedoms Alongside Well-being” forthcoming.

³⁵ Alkire “Subjective Quantitative Measures of Human Agency” *Social indicators Research (forthcoming)*

who is 'empowered' as a wife and mother may nonetheless be hesitant to participate in village meetings because of her low educational and social status.

Thus a minimally adequate multidimensional representation of capability poverty might take the form of a vector of ordered pairs (b_i, a_i) in which a_i represented the agency (or lack of agency) of person i with respect to their attainment of (lack of) each of the valued basic functionings b_i .³⁶ Whether the information is left as an array, or whether the functioning and autonomy information pertaining to each basic functioning /dimension of well-being are somehow combined, or whether the two vectors are assessed separately in one of a number of possible ways, is a separate topic.

Closing questions

The preceding discussion raises three quite distinct kinds of questions.

Limits of Multidimensional Poverty Comparisons

First, if empirically feasible multidimensional poverty measures are quite limited in terms of domains (most use two or at most four domains), how can these be combined with other kinds of information relating to excluded domains, to give a fuller analysis? Information on agency and freedom is one kind of information of pivotal importance to the capability approach, but information about omitted domains of well-being could be equally important.

Links to welfare economics

Second, how can work on multidimensional poverty measures link back into welfare economics, and advance the discussion and theory? [... *section missing* ... - *drawing on Wiebke Kuklys' book and A B Atkinson*]

Computational Power

Third, and finally, what problems could greater computational power assist? Features of multidimensional poverty are quite easy to articulate if not to solve: complex interactions between variables, uncertainty, vagueness and fuzziness, difficulty in compounding error terms, different kinds of variables, and so on. Furthermore, exogenous factors operate at various levels of analysis. What is quite interesting in this respect is that problems having similar characteristics have been solved using computer technologies. For example, the construction of tiny copper wires that connect transistors on computer chips to the outside world are formed by "passing electric current through a solution containing dissolved copper salts in order to deposit copper metal in the shape of wires." The problem is that to encourage the copper to deposit in the correct shape requires additives, but it is difficult to predict how the additive molecules will behave. "Many different phenomena influence behavior of additives, some operating at large dimensions associated with continuous variations, and some operating at small (molecular) dimensions associated with random stochastic variations."

³⁶ In situations with children or others for whom agency is differently understood, the more relevant factor may be the impact on other basic functionings in the future – e.g. compulsory schooling for children

Research into this problem could only advance by considerably intensified use of computational power. In this case, it takes about 10 days to perform the required calculations, using the 4th fastest “civilian” supercomputer in the world.

It is simply not possible to understand how all of these processes interact to determine the behavior of a complex system without computers to handle all of the bookkeeping. Supercomputers are playing a critical role in understanding the behavior of complex technological systems today. Forming copper wires on a computer chip is just one example of a complex system. ...Clearly, however, the strategic use of supercomputers offers the tools and methodologies for resolving fundamental problems far outside the scope of traditional scientific and engineering applications.³⁷

Conclusion

(forthcoming)

³⁷ Alkire, Richard C. and Richard D. Braatz, "Electrochemical Engineering in an Age of Discovery and Innovation" *AIChE Journal*, 50:9, 2000-2007 (2004). – all quotes in this example.

Various Dimensions of Poverty or Well-Being organized by discipline

Measures of Quality of Life

Andrews & Withely 1976: Concern Clusters ³⁸	Allardt 1993: Comparative Scandanavian Welfare Study ³⁹	Cummins 1990: Domains of Life Satisfaction	Sen & Anand 1994: Basic Features of Well-Being
<p>media societal standards weather government safety community house money job services recreation facilities traditions marriage children family relations treatment imagination acceptance self-adjustment virtues accomplishment friends religion health own education beneficence independence mobility beauty</p>	<p>Having: econ resources, housing, employment, working conditions, health, education</p> <p>Loving: attachments/ contacts with local community, family and kin, friends, associations, work-mates</p> <p>Being self-determination, political activities, leisure-time activities, meaningful work, opportunities to enjoy nature.</p>	<p>Material well-being, Health, Productivity, Intimacy/ friendship, Safety, Community, Emotional well-being</p>	<p>Longevity infant / child mortality preventable morbidity literacy nourishment personal liberty and freedom</p>

³⁸ p. 38-9

³⁹ Categories used in a survey of 4,000 respondents from Scandanavia. See Article in Sen and Nussbaum 1993.

Participatory Dimensions

<p><i>Voices of the Poor</i> Narayan et al 2000</p>	<p>Chambers 1995: Dimensions of Deprivation</p>	<p>Max-Neef 1993: Axiological Categories</p>	<p>Galtung 1994: HR in Another Key</p>	<p>Agenda 21: Dimensions of Development</p>
<p>Material Wellbeing: Having Enough Food Assets Work Bodily Wellbeing: Being and Appearing Well Health Appearances Physical Environment Social Wellbeing: Being able to care for, bring up, marry and settle children Self-respect and dignity Peace, harmony, good relations in the family/community Security: Civil peace A physically safe and secure environment Personal physical security Lawfulness and access to justice Security in Old Age Confidence in the Future Psychological Wellbeing: Peace of Mind, Happiness, Harmony (including a spiritual life and religious observance) Freedom of Choice and Action</p>	<p>Poverty Social inferiority Isolation Physical weakness Vulnerability Seasonality Powerlessness Humiliation</p>	<p>Subsistence Protection Affection Understanding Participation Leisure Creation Identity Freedom</p>	<p>1. Survival needs: <i>to avoid violence</i> individual & collective 2. Well-being needs: <i>to avoid misery</i> nutrition, water, air movement, excretion, sleep, sex protection against climate against diseases against heavy degrading boring work self-expression, dialogue, education 3. Identity needs: <i>to avoid alienation</i> creativity, praxis, work self-actuation, realising potentials well-being, happiness, joy being active subject, not passive client/object challenge and new experiences affection, love, sex; friends, offspring, spouse roots, belongingness, networks, support, esteem understanding social forces social transparency partnership with nature a sense of purpose, of meaning closeness to the transcendental, transpersonal 4. Freedom needs: <i>choice</i> : in receiving/expressing information & opinion of people/places to visit and be visited in consciousness formation in mobilization, confrontation, occupation, job, spouse, goods/services, way of life</p>	<p>1. Peace as the foundation 2. The Economy as the engine of progress 3. The Environment as the basis of sustainability 4. Justice as a pillar of society 5. Democracy as good governance</p>

Basic Needs – Practical Applications

Braybrooke: ⁴⁰	Doyal & Gough 1992: Intermediate Needs	Nielsen 1977 central elements' of human need	Lane 1969 needs inform political behavior	Packard 1960 hidden needs towards which marketing theory is orientated	Mallman 1980 Need fields:
<p>life-supporting relation to environment food & water excretion exercise periodic rest, including sleep whatever [else] is indispensable to preserving the body intact companionship education social acceptance and recognition sexual activity freedom from harassment recreation</p>	<p>Nutritional food/water Protective housing Work Physical environment Health care Security in childhood Significant primary relationships Physical security Economic security Safe birth control/ childbearing Basic education</p>	<p>Love companionship security protection a sense of community meaningful work adequate sustenance shelter sexual gratification amusement rest recreation recognition respect of person</p>	<p>cognitive needs - curiosity, learning, understanding consistency needs - emotional, logical, veridical social needs (affiliation, being linked) moral needs esteem needs personality integration and identity needs aggression expression needs autonomy needs self-actualisation needs need for instrumental guides to reality, object appraisal</p>	<p>emotional security, self-esteem, ego gratification, recognition and status, creativity, love, sense of belonging, power a sense of immortality</p>	<p>maintenance, protection, love, understanding, self reliance, recreation, creation, meaning, and synergy needs</p>

⁴⁰ p36

Basic Needs – Psychological Bases

Brentano 1908	Murray 1938	Fromm 1956 needs	Maslow 1943 Instinctive and universal needs	Ramsay 1992: Human Needs
<p>suggested heirarchy of needs – where the satisfaction of one leads to another’s development</p> <p>Maintenance of life – food, clothes, rest or recreation</p> <p>Sexual needs</p> <p>Recognition by others</p> <p>Provision for well being after death</p> <p>Amusement</p> <p>Provision for future</p> <p>Healing</p> <p>Cleanliness</p> <p>Education in Science and Art</p> <p>Need to Create</p>	<p><i>n</i> Achievement</p> <p><i>n</i> Sentience</p> <p><i>n</i> Sex</p> <p><i>n</i> Aggression</p> <p><i>n</i> Dominance</p> <p><i>n</i> Succorance</p>	<p>relatedness, transcendence-creativity, rootedness, sense of identity and individuality</p> <p>the need for a frame of orientation and devotion</p> <p>*****</p> <p>food water sex love power destruction ‘frames of orientation and devotion’</p>	<p>Physical needs</p> <p>Safety needs</p> <p>Affective needs</p> <p>Esteem</p> <p>Self-actualisation</p>	<p>Physical survival</p> <p>Sexual needs, Security, Love and relatedness, Esteem & identity</p> <p>Self-realisation</p>

Philosophical Dimensions of Human Value

Griffin Prudential Values	Galtung True Worlds ⁴¹	Davitt 1968: Value Areas	Finnis 1994: Basic Human Values	Lasswell Human Values	Nussbaum 2000 Central Human Capabilities	Qizilbash 1996: Prudential values for Development	Rawls' Primary Goods 1971 ⁴²	Sen 1999 ⁴³ Instrumental Freedoms
Accomplishment components of human existence deciding for oneself/agency minimum material goods limbs & senses that work freedom from pain & anxiety liberty understanding enjoyment deep personal relations	input-output (nutrition, water, air) climate balance with nature (clothing, shelter) health community symbolic interaction and reflection (education)	Life and reproduction, Protection and Security Title (Property) Sexual Union Decision-Responsibility Knowledge, Art, Communication, Meaning	Bodily life – health vigour and safety Knowledge Skillful performance in work and play Friendship Marriage Practical reasonableness Harmony with ultimate source of reality	Skill Affection Respect Rectitude Power Enlightenment Wealth Well-Being	Life Bodily health Bodily integrity Senses, thought imagination, Emotions Practical reason Affiliation Other species Play Control over one's environment	Health/nutrition/sanitation/res t/ shelter/ security Literacy/basic intellectual and physical capacities Self-respect and aspiration or self-determination Negative freedom or liberty Enjoyment Understanding or knowledge Significant relations with others and some participation in social life Accomplishment (sort that gives life point/ weight)	rights liberties opportunities income and wealth freedom of movement & choice of occupation social bases of self respect powers and prerogatives of offices and positions of responsibility	Political freedom, economic facilities, social opportunities, transparency guarantees, protective security

⁴¹ Galtung has listed different needs in different places.

⁴² 'things that every rational man is presumed to want' Rawls 1971 p 60-65, 1982: 162, 1988a 256-7, see Sen Inequality Re p 81.

⁴³ Sen 1999a:10, 38-40

Cross-Cultural Empirical Studies of Well-Being and Universal Values

Rokeach-Terminal	Schwartz 1994 Human Values	Wilson 1967 Correlates of A vowed Happiness ⁴⁴	<i>Argyle</i> Causes of 'joy'	Ryff Dimensions of Wellness ⁴⁵	Myers and Diener: Correlates of high subjective well- being ⁴⁶	Diener and Biwas 12 Life Domains
<p>A comfortable life (a prosperous life) An exciting life (a stimulating, active life) A sense of accomplishment (lasting contribution) A world at peace (free of war and conflict) A world of beauty (beauty of nature and the arts) Equality (brotherhood, = opportunity for all) Family Security (taking care of loved ones) Freedom (independence, free choice) Happiness (contentedness) Inner Harmony (freedom from inner conflict) Mature Love (sexual and spiritual intimacy) National security (protection from attack) Pleasure (an enjoyable, leisurely life) Salvation (saved, eternal life) Self-respect (self-esteem) Social Recognition (respect, admiration) True Friendship (close companionship) Wisdom (a mature understanding of life)</p>	<p>Power Achievement Hedonism Stimulation Self-direction Universalism Benevolence Tradition Conformity Security</p>	<p>young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person with high self- esteem, job morale, modest aspirations, of either sex, and of a wide range of intelligence</p>	<p>Social contacts with friends, or others in close relationship Sexual activity Success, achievement Physical activity, exercise, sport Nature, reading, music Food and drink Alcohol 1991</p>	<p>Autonomy Environmental Mastery Positive Relations with Others Purpose in Live Personal Growth Self-Acceptance</p>	<p>1. Certain traits: self-esteem personal control optimism extraversion 2. Strong supportive relationships 3. Challenging work 4. Religious faith</p>	<p>Morality Food Family Friendship Material resources Intelligence Romantic relationship Physical appearance Self Income Housing Social life</p>

⁴⁴ Wilson, W. (1967). Correlates of vowed happiness. *Psychological Bulletin*, 67, 294-306.

⁴⁵ Ryff, C.D. 1989. "Happiness is everything or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*. 57. 1069-1081. Her work synthesizes ideas from Maslow, Jung, Rogers, Allport, Erikson, Buhler, Neurgartens and Jahoda. See Christopher 1999, who argues that it is culturally embedded.

⁴⁶ Myers, David G. and Ed Diener. 1995. *Psychological Science* vol 6, no. 1 (January) 10-19

Robbins, L. C. R. (1932). An essay on the nature & significance of economic science. London, Macmillan & co., limited.

Robeyns, I. (2000). An Unworkable Idea or a Promising Alternative? Sen's Capability Approach Re-examined.

Sen, A. (1996). On the foundations of welfare economics: utility, capability and practical reason. F. Farina, F. Hahn and S. Vannucci. Oxford, Clarendon Press.

Sen, A. (2000). "Consequential evaluation and practical reason." Journal of Philosophy 97(9): 477.

Sen discusses consequential evaluation seen as the discipline of responsible choice based on the chooser's evaluation of states of affairs, including consideration of all the relevant consequences viewed in the light of the exact circumstances of that choice.