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Working Paper

On the report by the Commission on the Measurement of Economic Performance and Social Progress (2009). The viewpoint of a retired national accountant

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No. 162

On the Report by the Commission
on the Measurement of Economic
Performance and Social Progress (2009)

André Vanoli

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On the Report by the
Commission on the Measurement of
Economic Performance and Social Progress (2009)

The viewpoint of a retired national accountant

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¹ This text was presented in French at the 13th Conference of the “Association de Comptabilité nationale” (2-4 June 2010, Paris). It was translated into English by Jean-François Vacher, whom I thank warmly.

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Introduction

A heated debate over an imaginary GDP

The Commission's² aim was to ascertain the limits of Gross Domestic Product (GDP) as an indicator of economic performance and social progress, and to propose more appropriate indicators.

Within a short period of time, a considerable amount of work was generated and a very interesting report was produced. This document reviews the main ideas and proposals which have been put forward and discussed during the last forty years in relation to problems such as the measurement of growth, development, well-being, and environment. They also concern, in more recent formulations, sustainable development and the general progress of society.

As might have been expected, no new world-shattering idea was presented by the Commission. It mainly attempted to organize the present materials and to identify tools that are available or can be developed according to the different goals that are pursued. By assessing their relevance, the Commission could issue recommendations on paths to be primarily followed so as to

². Following a request by the President of the French Republic, Nicholas Sarkozy, the Commission was created in February 2008 and its Report was issued in September 2009. It was mostly composed of economists, and the 25 members included Joseph Stiglitz (Chair), Amartya Sen (Advisor to the Chair) and Jean Paul Fitoussi (Coordinator). Other members were: Bina Agarwal, Kenneth J. Arrow, Anthony B. Atkinson, François Bourguignon, Jean-Philippe Cotis, Angus S. Deaton, Kemal Dervis, Marc Fleurbaey, Nancy Folbre, Jean Gadrey, Enrico Giovannini, Roger Guesnerie, James J. Heckman, Geoffrey Heal, Claude Henry, Daniel Kahneman, Alan B. Krueger, Andrew J. Oswald, Robert D. Putnam, Nick Stern, Cass Sunstein, Philippe Weil. In addition, a group of Rapporteurs from INSEE, OFCE and OECD assisted the Commission, with Jean-Etienne Chapron (INSEE) as General Rapporteur. The Report is posted on www.stiglitz-sen-fitoussi.fr.

improve our general knowledge. In so doing, many useful clarifications have been achieved, even if the clarification effort was not always sufficient in my opinion.

The Report's structure is rather complex and can puzzle the reader. As a matter of fact, it is divided into three main sections with a potential overlap of content:

- **Executive Summary,**
- **Part I. Short Narrative on the content of the Report,** which contains 3 chapters: 1. Classical GDP Issues; 2. Quality of Life; 3. Sustainable Development and Environment.
- **Part II. Substantial Arguments presented in the Report,** with a division into the same 3 chapters as in Part I, with identical titles, although their substance is much more developed.

Moreover, another text with enigmatic status is also posted on the website of the Commission: "The Measurement of Economic Performance and Social Progress Revisited. Reflections and Overview". It is signed only by the Chair, the Advisor and the Coordinator, and its length is about the same as Part One of the Report. This additional document includes formulations which are not fully in harmony with the Report itself, in particular for issues treated in Chapters 1, and is not actually part of the Report³. Therefore, I will concentrate my personal remarks strictly on the analysis of the Report itself.

It is not easy for someone who has been involved for half a century in the different activities and discussions concerning National Accounting (NA), and who published a substantial work entitled "History of National Accounting" (HCN 2002)⁴ at the beginning of the 21st Century,

³ The reader may sometimes be confused about the actual message of the Commission. Interestingly enough, this new text altogether combined with a different presentation of the Report has been published by a French publisher (Odile Jacob) in November 2009!

⁴ André Vanoli : « Une histoire de la comptabilité nationale » La Découverte, juin 2002 (English translation: « A History of National Accounting » IOS Press, 2005).

to give his own views on this Report. The difficulty lies in the way the issues discussed have been taken in the public debate in the last decades. An excessive focus was brought upon a single tool, that is an instrument for measuring production, namely GDP, within an atmosphere of collective self-sustaining psychodrama. This context was not favourable to a reasonable, dispassionate analysis of the questions concerned. Consequently, risks of misunderstanding arise at every moment.

The very passionate characteristic of this debate, though worthy of lengthy exploration, prompts me to address it at least briefly.

National and international systems of national accounts explain that the aggregates they define and calculate are measuring notably the economic production, within a given definition of its field and with some conventions as usual, as well as the final consumption and, more generally, the different uses (consumption, fixed capital formation, etc..) for goods and services that have been generated by production activities. National accountants have always clearly stressed the point that these aggregates were not meant to measure welfare and that their changes in volume (at constant prices) could not be interpreted as changes in welfare of the society as a whole. Although Simon Kuznets' position was that National Income should be a measure of economic welfare, his view was not retained when National Accounting started to emerge in the Forties and Fifties of the 20th Century. The latter notably appeared with the remarkable contribution of Richard Stone and James Meade in the United Kingdom and the work of the US Department of Commerce's new team (Milton Gilbert, etc...), from which Kuznets started to depart, for that reason among others.

This stance on the part of National accountants was justified to a large extent by the debate that John Hicks initiated in 1940 in *Economica*, along with numerous economists until late in the Fifties, concerning the possible interpretation of changes in Real National Income as changes in terms of social welfare. Although dealing with this specific aggregate, the debate could also be applied to changes in volume in the aggregate for production, soon to become the main aggregate

of emerging national accounts. This theoretical debate, developed within the neo-classical framework, has demonstrated the reasons why, even in a pure market economy and without externalities, the National Income/Product and its changes could never be interpreted that way.

However, much ink and saliva have been expended in previous decades so as to “demonstrate” that GDP was not a relevant tool to measure welfare/well-being. This is quite easy to demonstrate actually because this aggregate, which is neither a measure nor an indicator of welfare/well-being, could obviously not be a relevant one.

In fact, what critics were questioning was the place given to economic growth and consumption in our contemporary societies’ concerns, as well as the damaging consequences that could result for natural environment and people’s well-being.

For reasons which have probably more to do with contemporary forms of communications and the media, the debate has been transferred from a criticism of society’s goals to a debate on the measuring tool of the production aggregate. Such a transfer hadn’t occurred, as far as I can remember, when growth was questioned at the end of the sixties and the beginning of the seventies, and the notion of development, considered then to be a more relevant concept, was favored.

It seems noteworthy to mention the titles of some of the work completed at that time which were related to the substance of the matter: “Is growth obsolete?” by Nordhaus and Tobin, and the famous Report by the Club of Rome⁵ entitled “The limits to growth”. In a similar way, the movement of social indicators did not question the measure of production but proposed relevant sets of indicators to represent the fields not covered by the production index.

Broadly speaking, we could say that in a few decades we went from the question “Is growth obsolete?” to the slogan, title of a forum paper published in Le Monde in 2002: “Down with

⁵ Also known as the Meadows Report

the GDP dictatorship!”⁶. Paradoxically, this movement took place within the same period of time when the use of growth rate figures as objectives in indicative planning started to decline in several western countries, including France. One could smile at the provocative title of *Le Monde*’s article if one ignored the fact that in the last 10 or 15 years a similar central role had been given to GDP as the alleged chief instrument for our societies’ economic governance, or even for their pure governance⁷.

A similar criticism, though less radical, is often formulated against what would be the GDP outstanding position in our information systems. Here again we should not get things confused. Indeed, the setting up of the system of economic information and its development has been given priority, especially until the beginning of the seventies. Nevertheless, the corpus of social statistics expanded tremendously in the following years, peculiarly in the wake of the social indicators movement, whereas a growing emphasis was then put on environmental information, although after some undeniable delay. Large gaps still exist in all domains, especially as the complexity of phenomena to observe increases. However, it is obvious that the basic underlying question is that there is presently no statistical measurement system in social and environmental fields comparable to what exists in the economic field with the monetary aggregates from national accounts. It does explain the understandable but doomed-to-fail temptation to expand the definition of these economic aggregates, whether they are GDP, National Income or Consumption/Expenditure to a much larger field of phenomena.

Even in the economic domain, one can easily observe that GDP is far from being such a preferential indicator. The short or middle term monitoring of economic activity requires a considerable amount of information, where a large range of indicators play an important part:

⁶ Jean Gadrey « A bas la dictature du PIB ! », *Le Monde* 23rd January 2002. I hope Jean Gadrey forgives me for using the title of his provocative paper, about which we exchanged messages at the time.

⁷ See articles on the theme “Our compass is defective” and so on.....

unemployment rate, consumer price index, households' consumption as well as their disposable income and their saving or debt ratio, foreign trade and exchange rates, public deficit and debt..... This list may also include stock market indices, which are often overwhelmingly dominant in certain media, or of course the industrial production index which shouldn't be forgotten even if it plays a minor part today. One may ask: "why not a general index of production?" That is precisely the main function of GDP, though it encompasses a larger purpose. As a short-term indicator it is generally calculated quarterly, and it has been sometimes asked to be calculated monthly.

Far from questioning this role given to GDP, criticisms were sometimes made on the fact that in some presentations of an economy's main indicators GDP or per-capita GDP was almost always listed side by side with population, life expectancy and also frequently the ranking of the country according to HDI (Human Development Index) and some other selected information. No need to be astonished by that. GDP offers a primary idea of an economy's magnitude and a reference to be compared to other figures such as public deficit or debt, balance of foreign trade, expenditures on education or health, etc..... Naturally, we could also use for the same purpose aggregates like GNI (Gross National Income) or even sometimes NNI (Net National Income)⁸, which would often be preferable. However, GDP, GNI⁹ or GNE (Gross National Expenditure) are calculated according to the same conceptual delineation of the economy.

Whatever be the matter, in the psychodrama context we referred to earlier voices have been heard, asking drastically for the end of the calculation of GDP and its replacement by a measure of well-being or social progress or a similar notion instead. Would the same voices have asked for abandoning the calculation of production if they had been conscious that it was precisely what GDP was measuring? Other voices were more moderate and proposed that GDP, actually

⁸ In the European Union, the 4th community resource is presently calculated on the basis of GNI.

⁹ In the 1993 SNA/1995 ESA, the term GNI (gross national income) took the place of the former wording GNP (gross national product). However the content is the same. Some economists and journalists apparently have not been informed of that, for lack of an adequate communication by national accountants.

NDP (Net Domestic Product), should be modified so as to take into account the relationship between the economy and the natural environment from a sustainable development perspective. Some others kept wishing only to complement GDP with other indicators.

Much needed clarifications

The “Main Conclusions Block”

The Commission has brought fundamental clarifications on the questions discussed here, even though some ambiguities may subsist to which I will draw attention¹⁰.

I will formulate in the following fashion what I call the “Main Conclusions Block”:

1. The Commission does not propose to give up the calculation of GDP, but possibly to adjust it or complement it.
2. The Commission shows how difficult it is to render the complexity of the concept of quality of life (in chapters 2, both terms quality of life and well-being are used indifferently). It cannot be derived from GDP through additions and deductions.

Different approaches are possible: subjective well-being, capabilities, fair allocations, etc.... Questions of metrics, of links between domains or dimensions, of aggregation are complex. Needs for additional or new information are considerable. Ethical choices cannot be avoided. Official statistical offices have to develop the necessary systems of information allowing to build different scalar indices. On the other hand, it is not their duty to actually design such indicators¹¹.

¹⁰ I do not intend to sum up the Report, or to formally present the Commission’s recommendations which are very clearly stated at the end of each chapter.

¹¹ An important precision has to be brought up here. Some official statistical offices play a double role: observation and production of statistical information primarily, but they may also conduct analysis or research activity. I understand that here the Commission considered only their role of observation and production of statistical information. Other activities are not excluded but should not be confused with observation activity. Although sometimes elusive or even puzzling for the public at large, this distinction is essential for official statistical offices.

3. The Commission proposes in chapters 3 to operate a radical distinction between the research of strictly defined sustainable development indicators, on one hand, and the work on measurement of current quality of life or observation/ measurement of interrelations between economy and environment, on the other. The prospective dimension of sustainable development implies extremely complex modelling work, and once more unavoidable normative choices that may have considerable impact. This work and those choices don't belong to observation statisticians. Proposals for adjustment of national accounts that have been made in the framework of research on integrated environmental and economic accounting cannot lead to true sustainability indicators. In that context, adjusted aggregates cannot be considered as sustainable.
4. The Commission considers that in all the concerned domains measurement and analysis of distribution, and thus of inequality, primarily between categories of households or individuals, is essential. This recommendation is fundamental since the study of distribution, although frequent in statistical work related to income and consumption of individuals, is almost always absent from macroeconomic national accounts themselves. The lack of connection between micro and macroeconomic levels is a serious limitation to the potential fruitfulness of analyses.

On quality of life /well-being

GDP in the domain of means, not of results

My comments will especially concern these main conclusions and their relationship. I start with quality of life /well-being. For the last years, or even decades, the term “well-being” has been increasingly used (in English) to convey a rather different meaning than the traditional term “welfare” in Economics. Well-being is used in research work that does not try to propose an aggregated measure of well-being in monetary terms through modifications and complements to the national accounts income or rather consumption aggregate. On the contrary, the term “welfare” seems mostly used in research work which keeps such an objective in the framework of neo-classical economic theory. Thus, Nordhaus and Tobin were working on “a measure of economic welfare” in monetary terms, whereas Osberg and Sharpe proposed an “index of economic well-being” that is¹² a composite index combining monetary and non monetary elements.

The fundamental starting point of chapters 2 is the distinction between the resources, i.e. the goods and services available for people and the results in terms of “quality of life /well-being” which derive from their use. Resources (of goods and services) are means. Their transformation into “well-being” varies according to individuals. Moreover, many resources are not marketed and numerous determinants of human well-being are aspects of people’s lives circumstances which cannot be described as resources with imputable prices, even if people do make trade-offs among

¹² There is a specific terminological difficulty in French because both well-being and welfare are often translated by the same term “bien-être”. In order to avoid such a confusion, in the French original of these comments, I kept the word “well-being” without translating it and spoke systematically in terms of “qualité de vie/well-being” when dealing with chapters 2 of the Report. By so doing I was coherent with an earlier proposal which I made of translating “well-being” precisely by “qualité de vie”. People interested in this semantic discussion are referred to p.7 of the French original.

them. I notably recommend reading § 65 of Chapter 2 in Part I of the Report and pages 143-145 of the corresponding Chapter 2 in Part II, and especially Box 2.1 entitled: “Is command over resources an adequate metric to assess human well-being?”.

This conclusion of the Commission implies that GDP (aggregated set of economic goods and services) belongs to the domain of means and not of results. As a consequence GDP cannot be transformed so as to become a measure in monetary terms of “quality of life/well-being”. A sentence in Box 2.1 is worth being quoted: “Quality-of-life approaches regard income or wealth [*i.e. in “monetary terms”*], even when extended though imputations of additional items, as an inadequate proxy of human well-being....” If I may recall it¹³, I have been unsuccessfully trying for years to convey the same idea about attempts to interpret GDP in welfare terms.

Chapters 2 of the Report approach the issue from the opposite side. They try to respond, by taking into account all its complexity, to the following question: “What is quality of life?”¹⁴

This question evokes the old philosophical debate on what constitutes the “Good life” or “A good life” (see page 143). The Commission didn’t try to give a consensual answer, but rather to identify areas where credible measures could be established.

¹³ In HCN 2005, I emphasized the distinction means/ends: “...all products described as final by National accounting are means to comply with certain ends..... Production, consumption and the effects of the use of the products should not be confused...” (p. 290). Again, in a presentation at a conference on Services (14 October 2005): “I consider.....that the distinction between means that have been put to work and the results from their use or the ends pursued is fundamental. The production of goods and services, their acquisition by users are part of the domain of means, and GDP would in no way, whatever be the kind of correction, constitute and indicator of the result of the effective use of goods and services (individual or collective) by the beneficiary (or sometimes by the victims). It could never be an indicator of well-being”. (« Les services dans la Comptabilité nationale et la statistique. Rétrospective et problèmes actuels », unpublished p. 17).

¹⁴ The Commission has systematically avoided treating the question in terms of “happiness”.

The Commission started first to analyse the main conceptual approaches for this purpose: subjective well-being, the notion of capabilities and economic notions derived from welfare economics and from fair allocations theory.

Then, it reviewed the objective features that constitute quality of life: health, education, personal activities, political voice and governance, social connections, environmental conditions, personal insecurity and economic insecurity¹⁵.

Finally, its attention was focused on cross-cutting issues: inequalities and their cumulative impact on quality of life, estimation of links between the various dimensions in quality of life, and the search for aggregation methods of measure across different dimensions of quality of life.

One can safely say that throughout the chapters 2 the Commission never took the easy way. What is presented here is as remote as possible from the hurried people's expression "you only have to".

The large developments of Chapter 2 in Part II that are dedicated to the objective features of quality of life (from health to economic insecurity) will remind people who have known it of the social indicators movement that was born in the seventies¹⁶. They also reflect the considerable progress accomplished since then in social statistics and in studies or research on the social field (see notably what is relating to health, education and social relations). At the same time, the problem of aggregation across all dimensions, upon which Richard Stone's attempt to build a

¹⁵ One could expect to find working life amongst the major characteristics of quality of life. It was not forgotten. The question has been discussed in some of the parts devoted to the main features, especially among personal activities (notion of "decent work" from ILO), social connections (with workmates or through labour market networks) and economic insecurity (unemployment). However, this major part of human activities is rather understated here.

¹⁶ From a statistical point of view, the culminating point of this movement was the impressive proposal by Richard Stone of the creation of a system of social and demographic statistics (see the UN Final Report "Towards a System of Social and Demographic Statistics" published in 1976, which is briefly summarized in HCN 2005, Box 31, pages 199-200).

System of social and demographic statistics drawing inspiration from national accounting¹⁷ had stumbled, seems to be still unresolved. In page 207, the Report is quite clear on this point: “The search for an aggregate measure of Quality of life that combines information across all its dimensions is often perceived as the “Holy Grail” of all efforts to go beyond conventional economic measures. This perspective is, however, both limited and deceptive. Limited, because establishing a comprehensive measurement system for Quality of life that is capable of producing high-quality information in its various fields is a task which is more difficult and longer-term than that of combining the available [*i.e. partial*] information in a single summary measure. Deceptive, as aggregating the various aspects of Quality of life cannot be accomplished without value judgments that are necessarily controversial ...”

The Report nevertheless recognizes that there is a real challenge to bring a more condensed depiction of quality of life than the ones supplied by series of non monetary indicators.

In fact, one may wonder if there isn't a possible candidate for the role of numéraire for quality of life/well-being in the approach of subjective well-being which has been developed for a few decades in relation to psychology. It cannot concern the measurement of satisfaction with life as a whole (overall judgment of a person on his/her life at a given moment). Such a measure may be of an utmost interest by itself and can be compared with various objective characteristics from that person. Yet, its very nature of global judgment that makes all its interest is at the same time a limitation to the methodological possibilities, even if it's only measured for some specific aspects (life at work...).

Conversely, the more analytical aspects of a subjective well-being approach (presence of positive feelings or affect, absence of negative feelings or affect, on a period of time) aim at

¹⁷ This system was based on an integrated structure of social and demographic statistics through the consistency of concepts, definitions and classifications and the proposal of sets of indicators by domain. However, no common numéraire could have been identified.

measuring, through complex surveys of course, the positive or negative flows of emotions recorded in the course of time in the different types of activities of daily life. I do not intend to get deeper into the used or proposed methods and the arising problems (see Report Chapter 2, Part II, p. 146 and sq). I rather wish to underline the fact that subjective well-being methodology can be interpreted as an attempt to perceive and measure the quality of life of individuals from a direct study of their psychological reactions. Those results depend on the combination of means, determinants and characteristics on the base of which the psychological reactions are generated. In the future, are brain specialists going to develop methods that can some day record the electrochemical phenomena which are associated to these psychological reactions?

The preceding reflections¹⁸ intend mainly to underline a very important aspect of subjective well-being approaches. They can be seen as relying on a radical distinction between observation of “means/resources” and observation of “quality of life”. Starting with this perspective would open and extend the field of analyses between the two domains.

Subjective well-being types of approaches however do raise fundamental questions: interpersonal comparability of emotions, consistency of their evolution in time, possible existence of thresholds and maxima (is the maximum emotional capacity evolving with time?), and finally, last but not least, “What is utility?” We might as well ask: “What is happiness?” which has been increasingly assimilated to life satisfaction in numerous research works conducted in the last years. Fortunately, the Commission has avoided entering the discussion on this question. Briefly (Part II, Chapter 2, p. 145-146), it expresses a clear criticism of the current assumption that all dimensions of subjective well-being can somehow be reduced to a single concept of “happiness”. These questions finally demonstrate that the problem of a numéraire unit is also applicable to the subjective well-being approach.

¹⁸ It is obviously neither a proposal by the Commission, nor by the author in this regard.

In fact, the question of numéraire as I presented it in previous pages is not explicitly brought up in the Report. It shows slightly up in the limited development dedicated to aggregation across dimensions. The Report is very critical, with a few nuances (see Box 2.2, p. 154), of the use of total willingness-to-pay in the line of welfare economics. It is less critical of the fair allocations theory and especially the “equivalence approach” with the notion of equivalent income that has been the object of many studies in the last years. Truly, through reading those paragraphs devoted to the equivalent income notion one cannot easily draw a global conclusion on its potential interest. It is noted (p. 155) that this approach makes it possible to use a monetary metric for measuring non market aspect of quality of life. However, it is also noted (p. 214) that the equivalent income should not be interpreted as giving a special value to money over other aspects of life. This only means that a non monetary unit of measurement is not required to integrate the non monetary aspects of quality of life. But overall it seems difficult to assess the possible extensions of the method so as to cover the whole population, whereas it is used to compare groups of individuals. Although the global opinion in the Report about this approach is rather positive, its main weaknesses are the necessity to get information on individual preferences (as well as in the willingness-to-pay method) and to be able to make difficult ethical choices in determining reference values for the non monetary dimensions of quality of life.

On the whole, the Commission’s opinion in chapters 2 seems quite clear. There is no method that would allow for an unequivocal aggregated measure of Quality of life (no prospect of a Holy Grail). On the basis of deeper analyses, that I will mention later, normative choices are unavoidable, first to choose the components (the contents) to be retained in order to determine the quality of life, and second to connect the various dimensions and possibly build one or a small number of composite indicators which represent them. The necessity to make normative choices leads to think that official statistical offices should not take the role of constructing themselves such composite indicators. Conversely, they ought to develop the necessary statistical investigations,

especially the household time surveys and satisfaction surveys, and other aspects of public information systems.

The Report's "key messages and recommendations" about definitions and measures of quality of life/well being may appear both eclectic and selective. However, they are not totally eclectic since they obviously exclude the route, considered unrealistic, of the search for a single indicator (whether monetary or composite), which would cover the whole domain of phenomena and factors that are shaping the quality of life/well being. The notion of limits to measurement in monetary terms is explicitly formulated. The Commission selects the more promising approaches and suggests combining their use for either substantial or instrumental purposes. For reasons that may be due to the diversity of opinions among its members, or more probably because of an acute conscience of the world complexity, the Commission does not provide much information on the type of final multipolar realistic scheme that would maybe allow to reconcile the following two constraints: on one hand, answering imperatives of an unbiased (i.e. avoiding all excessive simplification) representation of the world, and on the other hand, fulfilling the wish to obtain results that can be mastered by large groups of citizens. Indicators cannot replace a thorough analysis. To which extent can we consider that thorough analyses may produce representative semi-synthetic composite indicators? To this question, that was one of the initial points of its mandate, the Commission does not bring any ready-made answer (I stipulate for clarity that in my eyes it is not a criticism but a compliment). Thus, regarding the capabilities approach, which was developed by Amartya Sen whose strong influence is reflected in the philosophy of chapters 2, one can feel the vast potentialities it brings to the required thorough analyses, although it is difficult for the reader of those chapters to fully perceive how they can contribute to the decanting of an array of indicators meeting the conditions expressed above¹⁹.

¹⁹ See pages 151-153 of the Report. This approach based on the notion of "capabilities" conceives a person's life as a combination of various "doings and beings" which are "functionings", i.e. activities and situations (achievements) that

The recommendations are a strong incentive for the development of both a rich set of information and statistics and a thorough research activity. They are well into the movement which for forty years has set forth the systems of social statistics, various types of analyses and research, and the published synthesis on the state of societies under several forms of periodical reports.

One may think that it would be preferable in a country like France to build an institutional device that could federate (not centralize) and promote the work aiming at improving the knowledge of quality of life/well being (Towards a “system for observation and measurement of quality of life”?). This knowledge depends notably on the choice of components to be retained in the definition of this concept but also on the methodology to develop, so as to build a limited range of representative indicators, which probably would not be exhaustive. Taking into consideration the complexity of this notion, it should represent a constantly problematic process. One would always get close to the objective without reaching it, and never be in a position to define it strictly

people recognize to be important. Some of these achievements can be elementary or complex. As people in different places and times have different values and experiences, the choice of the most relevant functionings depends on circumstances and on the purpose of the exercise. The well-being of a person is then a summary index of the person’s functionings. But the capabilities approach goes beyond. It considers the full range of opportunities open to people. It estimates the quality of life in terms of freedom for a person to choose among the various functioning combinations.

Then, the text presents the intellectual foundations of the capability approach (focus on human ends; rejection of the economic model of individuals acting to maximize their self-interest; emphasis on the complementarities between the various capabilities for the same person; and their dependence on the characteristics of others and on the environment where people live; lastly, the role played by moral considerations and ethical principles, and its central concern with justice).

Finally, it describes the three steps for the practical implementation of this approach: choosing among dimensions/capabilities; getting information on these, although the text considers that it is less available on the range of possible choices than on the functionings; and thirdly the valuation of the different capabilities, presented in partial rankings or orderings whose intersection may reflect the “minimum that could safely be said while respecting both the incompleteness and conflicts of people’s valuations.” (p. 153).

beforehand, whereas it would always be questioned in the same movement by the social debate itself.

On sustainability in a strict sense

Although the last sentence of previous paragraph may be considered a little pompous, it was intentional, and it will form a transition towards the chapters 3 of the Report that are concerning sustainable development and environment. The third sub-group of the Commission focused on the “sustainability” component of sustainable development. It made a distinction between the two notions of current “well-being” discussed in chapters 2 and its sustainability, whereas the Report notes that the notion of sustainable development has become an extensive concept covering each dimension of present and future economic, social and environmental “well-being”.

The direct connection between chapters 2 and 3 of the report, in terms of quality of life/well being, is problematic for the present time observer of current well-being. Chapter 3 of Part I brings up the question of durability in the following fashion: “assuming we have been able to assess what is the current level of well-being, the question is whether the continuation of present trends does or does not allow it to be maintained.” (§ 168). This kind of reasoning is familiar to economists and cannot be criticised in itself. In this case however, where the complexity of the notion of quality of life/well being and the measurement difficulties as analysed in chapters 2 have to be taken into account, it can be interpreted as whether it is possible to maintain durably into the future something that we cannot fully grasp and measure in the present, and that maybe (or probably?) we shall never estimate in a sufficiently consensual and convincing way.

Whatever be the judgment, we have to approve the Commission for this net distinction between the two notions (current/durable) and for focusing in chapters 3 on the sustainability issue. By doing so, it underlined the fact that the latter did not belong to the domain of observation (ex-post accounting) but to the one of modelling the future in a peculiarly ambitious way. In an extended approach of the notion of wealth (the Commission uses both terms of wealth or capital

which are currently used²⁰), if this extension is covering whatever is a source for quality of life/well-being, the variation in such an extended wealth becomes then a global indicator of durability²¹.

However, as underlined by the Commission (see Part I, chapter 3, §179), the measurement of durability by the mean of a single index of extended wealth variation can work only on two strong assumptions:

1. Future eco-environmental developments can be predicted perfectly,
2. There is perfect knowledge about how these developments are going to affect well-being.

The Commission stresses that these two assumptions are clearly at odds with our real world situation.

The first assumption faces uncertainty about the evolution of behaviours and techniques. Uncertainty is fundamental. Estimating prices of different types of assets by taking into account the

²⁰ I noted with interest that the Commission was conscious of the terminology problem. In chapter 3 of Part II, pages 265-266, the recommendation 2 specifies: “we must also recall that phrasing the issue of sustainability in terms of preservation of some “capital” goods does not mean that one consider that these goods must be managed or traded as ordinary capital goods..... To avoid such a misunderstanding, we have tried here to retain the more neutral term of wealth as much as possible.” I use myself in French the term “patrimoine”, which is less connotated but has no simple equivalent in English.

²¹ In Box 2 from chapter 3 of Part II (pages 251-253) entitled: “Sustainability, wealth and intertemporal approaches to well-being”, the Commission explains why it put no emphasis on an intertemporal long-term approach of well-being. Long ago, Samuelson (1961) had shown that such a perspective contained so many potential futures (a large amount of “futuraity”) that all estimation of social well-being became practically impossible. Hence the choice by the Commission of the narrower approach of durability where the issue is whether society will be able in the future to have a current level of well-being at least as high as the one we dispose of today.

future²² is thus extremely difficult, the more so when considerations of non-substitutability between them arise, and when the value of critical environmental assets should be set at extreme levels. The

²² It is not quite easy to “concretely” portray what the modelling process referred to needs and implies as a whole. For the benefit of readers, who are like me not so familiar with the underlying economic literature, it may be useful to quote lengthily a very enlightening extract from a recent article by Didier Blanchet who was one of the Rapporteurs of the Commission (“La mesure de la soutenabilité: les propositions de la Commission Stiglitz”. La Revue du CGDD, “Les indicateurs du développement durable”, Janvier 2010, p.15-19): “The objective is to assign relevant relative prices to the different changes in stocks that enter the index..... In the case of environmental goods, market prices are either inexistent or strongly biased. Imputation becomes then completely unavoidable. On which basis should we operate? Strictly speaking, the value to be given today to changes in stocks of a certain asset, whatever it is, must correspond to its contribution, positive or negative, to the entire path of future well-being. This brings us well beyond classical imputation problems such as for instance the current valuation of non-market services. What is required here is no less than a complete projection of future economic and environmental conditions, and of their impact on well-being of future generations. One needs not only to model dynamic interactions between economy and environment, but also to predict how the evolution of the preference systems will weight tomorrow those two categories of components of well-being. It is only at the end of such a calculation that one can give positive or negative “values” to current accumulation or degradation of the different assets. *[It is here assumed that we can estimate the current changes in volume of the various types of assets composing the extended wealth - AV]*. For instance, the “value” of a given decrease in biodiversity should be measured by its cumulative impact on the entire path of future well-being. The requirements of such an exercise are obviously extremely high. For instance, the tapping of a natural asset can decrease its stock until it reaches a critical threshold, below which consequences on future well-being become dramatic. One has then to impute to this natural asset an extremely high implicit price if the market does not send any price signal of this kind. Determination of this price requires the use of a model that can explicit the predictable consequences of such an “excess”. There may also be consequences for assets for which the market sends a price signal generally considered as more acceptable. The accumulation of a physical capital good may for instance be the initiator of an important environmental externality which has not been taken into account in market prices. In order to include this externality, the observed price of this asset should be replaced by a corrected price which could possibly be negative.

Models of integrated eco-environmental projection do exist and allow for this kind of valuation; such a model has been used for instance as a basis for the Stern report, but the use of this kind of instrument goes much beyond standard

second assumption faces on its part two major obstacles: anticipation of future generations preferences, and considerations on distribution. The latter ones are already occurring in the possible aggregated measures of current quality of life/well-being. Although often left aside, they are a part of the definition of sustainability retained by the Brundland Report. Moreover, the global (worldwide) dimension of sustainability is an additional source of complexity. I could also add for instance that it shows how the questions of equity between successive generations, in a given economy where sustainability models are focusing, and equity within the same generation, which is usually neglected by these models, cannot be separated. Naturally, the Commission underlines this fact, but emphasizes maybe not sufficiently the essential relationship between these two forms of equity. As it puts it, uncertainty is also normative.

In front of these obstacles, perhaps impossible to overcome, the Commission proposes a hybrid approach and a pragmatic compromise.

The starting point of its recommendations, as emphasized again, is the separation of the issue of sustainability from the current quality of life/well being one or from current economic performance. Approaches that neglect this aspect, and particularly those who seek to combine these two dimensions into a single indicator, lead to confusing messages (§ 193). It is unlikely that this point of view, based on a rigorous approach, would be accepted by everyone. It actually fully strikes at the heart of numerous currents of thought, which for a few decades have been aiming precisely at estimating a single indicator, most often in monetary terms, for sustainable development in its various dimensions. The Commission's message does not go in the direction, for example, of indicators such as ISEW (Index of Sustainable Economic Welfare) or GPI (Genuine Progress Indicator). The Commission also shows that indicators of the type of Net Domestic

statistical production. It is a work that requires multiple expert assessments and it is unlikely to lead to a single figure. These long-term projections are submitted to a high degree of uncertainty, and the results of calculation will thus depend on the assumptions and on the model chosen for projection.” (Blanchet, 2010, p. 17)

Product adjusted for the environment (e.a.NDP) from the System of Integrated Environmental and Economic Accounting (SEEA) do not constitute sustainability indicators. They are in fact indicators of an imbalance in the relation between economy and nature, but they do not tell us how far we are from the threshold of non-durability or sustainability objectives. It is worth stopping and reflecting a moment on these indicators of the e.a.NDP type. I remember that when the preparation of the SEEA 1993 did start, at the turn of the 80's of previous century, one of the first proposed tables in a working document of the UN was labelling the aggregate that it measured as "sustainable". But it was easy to see that this aggregate was not only partial but actually represented a corrected ex-post measure, which was not based on an exploration of the future. Hence the immediate decision to abandon the expression of Sustainable Product or Income to the benefit of the more modest notion of Adjusted Product or Income.

Indeed, the ambiguity that we just pointed out was in part linked to the reference which became dominant in the 80's to the concept of income by Hicks (i.e. income is very schematically defined as the maximum amount that one can consume without being impoverished). Hence a shift occurred towards the idea that the income that national accounts measured should be, in order to be conceptually correct, the sustainable income. Compared to the (net) income effectively measured by NA, which is a largely empirical notion taking into account the consumption of economic fixed capital, income would have to become implicitly or explicitly the maximum amount that one could consume without being impoverished *in no way* . I return later on to the difficulties that this approach involved, even though it was renamed adjustment for the environment, and the ambiguities that it entailed.

By clearly distinguishing between current measure and measure of sustainability, the Commission does not therefore retain the idea that the correct current measure (of product, income) should be the sustainable one itself. But, it does not say by the same token, and this can be a source of difficulty, how we should interpret the current measure. One could attempt to interpret the

approach of the Commission by saying that it is implicitly based on the existence of an “epistemological break” between the observation/measurement of the current economic performance and the observation/measurement of the quality of life on one hand, and the projections of distant complex futures on the other. From the results of the latter ones, we could not infer a measure that would be considered as "the" correct measure for the present time, let alone because of the plurality and the expansion of possible futures when the time horizon extends²³. Within a possible line of thinking of this type, one could support the idea that the income concept of Hicks can either be applied to the present time in reference to a near future (Hicks initial formulation in *Value and Capital*, 1939, retained the time horizon... of the week), or be applied to some distant future, but one could not use the two perspectives at the same time. There would be no *ex ante* continuum between the present time and possible futures. Those reflections may be calling for deeper thoughts formulated by more scholarly experts than myself.

The Commission feels some sympathy for the concept of Adjusted Saving from the World Bank (adjusted net saving or ANS), and reverence for the Ecological Footprint. It does so for the first one, which belongs to an all-monetary approach, because it is attractive to many economists for the reason that it moves within an explicit theoretical framework. The second one belongs on the contrary to an entirely non-monetary approach, but is using a physical kind of numéraire (the

²³ The formulation of my last two sentences is probably not appropriate. It expresses an already old questioning I have on long-term sustainability models, notably on the underlying model used for calculation of the net adjusted saving of the World Bank. The Bank's ambition is to lead later, under assumed ideal conditions, to such a single estimate of extended wealth whose variation would become a global indicator of sustainability. But the plurality of possible non-probabilistic futures leads to doubt the possibility of arriving at a single figure for *today's* extended wealth which would suit the objective. At the end of the text already quoted above from Didier Blanchet, he writes - I recall it - "This is a work that requires multiple expert assessments, and it is unlikely to lead to a single figure" (see note 21 above). From the point of view of a national accountant, one can wonder if this type of model does not promise more than they can deliver (which does not mean that they are not useful).

global hectare) as an equivalent of the biological productivity (biocapacity) of the planet on one hand and of consumption on the other hand. The interest for the latter derives from the fact that its message is striking and provides a large communicational efficiency. However, the Commission recommends as such neither one nor the other. The strength of the ANS, i.e. its theoretical framework based on the concept of extended wealth, constitutes also its weakness and vulnerable point when looking at the Commission's analysis of the strong unrealistic assumptions that this type of model supposes. Its coverage is partial, market prices when they exist are not generally representative in terms of sustainability, and in their absence one should have recourse for their estimation to long-term modelling, whose complexity and fragility has been rightly underlined by the Commission. Finally, since it is calculated on a national basis, it misses the global character of sustainability.

The Commission, like generally speaking economists, feels obviously uneasy when dealing with the Ecological Footprint. This indicator's results are striking (§ 162), its pedagogical qualities are certain (p. 245). Its weaknesses, that are similar to those of the ANS but for very different reasons, have been criticised from various sides (limitation to the nature; no integration of technical progress; absence of coverage of extraction of fossil resources, of biodiversity, and of the quality of water; lack of meaning of a purely national comparison between footprint and biocapacity²⁴). For a more complete review of the question, the Commission has referred to the recent report by the French Economic, Social and Environmental Council (P. Le Clézio: "L'empreinte écologique et les indicateurs du développement durable" Avis du Conseil économique, social et environnemental, 2009).

Finally, the chapters 3 of the Report, although so rich with analyses and clarifications, present us with only modest and limited suggestions: building within the global dashboard that the

²⁴ This criticism has led promoters of the method to present instead national footprints as countries contributions to the global unsustainability.

Commission recommends a sub-dashboard devoted to sustainability in a strict sense, and whose components would provide information on changes in the "stocks" (the quote marks are from the Report) that are underpinning the human quality of life/well-being; it should include a monetary sustainability index that would essentially be limited at the current stage of knowledge to economic aspects of sustainability, and could determine whether or not countries are consuming their economic wealth ²⁵; the environmental aspects of sustainability should be treated separately with the help of a good set of physical indicators (§ 203).

²⁵ This partial monetary sustainability index includes human capital to which the Commission devotes Annex 2 of Chapter 3 in part II of the report. It recommends establishing satellite accounts for human capital at regular intervals of time. This recommendation should be approved and it is a pity that this has not yet been put into practice. However, some comments can be formulated at this point. Human capital is generally understood today as the intangible capital for education. It may be noted that in the work of John Kendrick (*The Formation and Stocks of Total Capital*, 1976), in terms of costs, a part of health expenditures and mobility costs were taken into account. The concept was wider. New reflections on the concept itself are desirable, particularly in the context of the analysis of quality of life. The work of Kendrick was based on the accumulation of investment expenditures. The theoretical approach of "direct" measurement (the quote marks are from the report itself) by the present value of future income has since become dominant. With this in mind, a satellite account for education should distinguish between input (costs) and output (p. 274-275). This corresponds to a distinction between investment expenditure and effective formation of capital which, in real economies, may differ. However, when the report says that "the value of produced educational services is measured as" "the increase in human capital through education" (p. 275), it runs the risk of creating ambiguity. Educational services are means. Human capital increase is a result of their use, combined with other factors. The output (i.e. production of services) /outcome (results of their use, etc....) distinction is still necessary. The report shows that, for various reasons mentioned in these pages, the interpretation of differences between the input side and the output one will probably not be simple. The report does not evoke the question of maintenance expenditures of human capital, which was the object of fairly lively discussions in the past. Kendrick was hesitating. He had estimated them as a complementary work, in order to calculate the respective remuneration rates of human and non-human capital in a consistent way. Partly for that reason, it is well known that the possible inclusion of human capital within the central framework of NA has always seemed very problematic to national accountants.

Concerning these physical indicators of environmental sustainability, the Commission is proposing to retain primarily, rather than the Ecological Footprint which raises many reservations, a simpler indicator that can generate more direct information on the issue of climate change, i.e. the carbon footprint (which is also recommended by the French Economic, Social and Environmental Council). For other indicators the Commission considers, after mentioning a few important physical ones (§ 202), that at this stage of the debate, economists have no special qualification to suggest the best choice. It belongs to specialists from other disciplines to fulfil this task (see Box 3, § 204 or p. 267-268).

Although they are formulated "in the current state of knowledge", the recommendations of the Commission raise the question of the limits of the theoretical economic models based on the notion of extended capital/ wealth like the Adjusted Net Saving. Beyond their eminent role for economists' analysis and communication, it is doubtful to ever build from them projections of uncertain futures which would produce an integrated synthetic monetary indicator capable to send a warning signal. The more likely, as in the case of climate change, is that warning signals will come from observations related to physical phenomena. Under this assumption, the contribution of economists, which is not negligible, would be located downstream of the routes followed for detection of partial non-durability (which may not be that "small", as shown in the climate case), but not upstream in order to detect global non-sustainability. In all cases, the question of substitutability between the various forms of wealth/capital arises, especially for the one called "critical natural capital" (see climate issue).

Those who followed the preparation of the 2008 SNA know that in the future - and for the first time since the national accounts exist - acquisitions of destructive military durable goods (weapons, launchers, etc.) will be included in the GFCF and therefore in the "economic wealth". I personally consider that this decision has been a mistake. It takes a peculiar savour when one considers the issue of the measure of sustainability and the discussions on substitutability between the various forms of economic assets and others.

Through the proposal of a small dashboard for sustainability in the strict sense, anchored in the extended stocks of assets approach, the message of the Commission is not devoid of ambiguity. On one hand, it provides a useful clarification on the general tendency to use the word “sustainable” too widely. On the other hand, as it cannot push this approach until its end, though not stating clearly that it will probably never be possible to do it, it thus leaves in suspense the general issue of sustainability indicators, such as they are proposed within strategies for sustainable development (national, European, or global) and, consequently those strategies themselves are also in suspense. Should we exclude from them any element pertaining to the governance of societies, to parity between genders, or to elimination of discriminations on the grounds that we do not see which fairly representative notion of stock(s) could correspond to the (not so appropriate in my opinion) concept of "social capital"? Should we also exclude any element pertaining to intra-generational equity or to combined intra-/inter-generational equity at world scale under the pretext that theoretical models are only comfortable at handling the inter-generational equity (minimum quality of legacy passed to the future generations)? More generally, should we refuse to include any element which is not, or is not intended to be a strict sustainability indicator?

Fundamentally, the role of sustainable development strategies is to allow people to envision the long-term and medium/long term periods, and thus to place the observation and interpretation of present time in the perspectives they design or periodically redesigned, away from the pressure of circumstances. It is desirable to avoid too large a number of indicators, to arrange them as much as possible in relation to the various stocks of assets when it is relevant²⁶, and to prioritize them in various ways. Reducing their role to the measurement or detection of durability/non durability in a strict sense would probably be counter-productive. It is unlikely that the Commission had such a proposal in mind, but the question is worth being clarified.

²⁶ This is not always the case, and it would be an artificial way to overdo a presentation so as to give the impression that we are still within an orthodox approach of extended wealth.

On the economy/nature relationship in current National Accounting

Chapters 3 of the Report are entitled "Sustainable development and environment". However they have been centred on the issue of sustainability and have not addressed the problem of the relations between economy and nature in current environmental accounting. They have not been dealt with either in chapters 1 (Classical GDP issues). The Report mentions them only incidentally. Finally, none of the formulated recommendations concern them directly. This gap is probably due to the Commission's composition. It is however surprising since the issue of integration of the environment into NA has been very present all along the debates in the last decades. Some external observers of the Commission thought that, because of its emphasis on net rather than gross economic aggregates, especially in the case of net national income (more precisely on the net national disposable income), it would be (or was) led to propose that the consumption of fixed capital of national accounts should be extended to the consumption of natural assets, which is resulting from their extraction or from their degradation due to economic activities. According to many proposals, particularly the introduction of a net domestic product adjusted for the environment which is included in the System of Integrated Environmental and Economic Accounting (SEEA 1993) of the United Nations, this extension should result into an adjustment that decreases the nominal value of the net domestic product (or the net national income).

Chapters 1 brought up briefly two issues. The first one concerns the depletion of market non-renewable natural resources. The two possible treatments of this question are very clearly presented. One could first deduct the value (measured by the rent) of the extracted resources from the value of the output in concerned economic activities, and thus from the GDP (this is the position mainly supported by the author of the present reflections). Alternatively, one could increase the depreciation (a term that economists usually employ instead of the NA concept of

Fixed Capital Consumption), and thus reduce the net domestic product without touching the GDP (it is the majority's opinion with many variants). But the Commission did not discuss these options and therefore made no choice (see part I, chapter 1, § 16 or part II, chapter 1, § 27). The second issue concerns the degradation of the quality of the (non-market) natural environment. The Commission evoked without much precision the various attempts at estimating it. However, it said, they had not much success (see part I, chapter 1, § 15; some more considerations can be found on depletion and degradation issues in part II, chapter 1, § 26-30).

Chapters 3 have to some extent developed the presentation of environmental adjustment proposals to GDP/NDP, especially those from SEEA 2003 (see Part I, chapter 3, § 141 -150; Part II, chapter 3, pp 239-241). Despite their interest, these pages do not reach a conclusion, except on a truly essential point that we already encountered: none of the proposed measures, such as indices of sustainable welfare or environmentally adjusted GDP/ NDP, characterize sustainability per se (Part I, chapter 3, § 150; Part II, chapter 3, p. 241).

However, there is an ambiguous passage a little further, in chapter 3, part II, which is dedicated to estimation issues of assets in monetary value. This segment inclines towards a downward adjustment of GDP or NDP in nominal value. It evokes the costs for avoiding the degradation of natural assets as a result of economic activity (costs of facilities intended to avoid emissions of pollutants into the atmosphere; prices set for maintaining the level of emissions or the degradation of environment below some objectives, such as in the case of valuation of CO² emissions. It considers that this solution, which is inappropriate for measuring sustainability, may be suitable for the Green GDP type indices²⁷. "The Green GDP measures what we would be able to

²⁷ It is unfortunate that the Commission uses the term "Green GDP" without criticizing this terminology, to which I personally have always been opposed. Whatever be the way the GDP of a "dirty" economy would be corrected ex post, it would always be the GDP of a dirty economy. It could only be acceptable to use the term "Green GDP", or "greened GDP", for a GDP resulting of the ex ante simulation of an economy that would have to comply with certain

produce without deterioration of the environment: in such a perspective, it is an appropriate strategy to subtract from standard GDP or NDP the potential costs that we would have to incur in order to maintain the environment in its current state" (pp 253-254). This suggestion, which was formulated as an incidental remark, has not been reiterated in the Commission's recommendations. I would add, in my view, "fortunately". I will be more specific on this in the following two points.

Firstly, I believe it is incorrect to say that "The Green GDP measures what we would be able to produce without deterioration of the environment". There is no clear reason why this should be measured by the difference between what we effectively produce (with deterioration) and the potential avoidance costs (imputed maintenance costs in the SEEA terminology). This hyper static hypothesis has in my opinion no real meaning. Moreover, I also find the position formulated in pp 253-254 contradictory with a more correct analysis that can be found p. 240, in the last § of the same chapter. It deals with the question "how much would it cost to prevent environmental degradation?" which is the same as that of p. 253. Maintenance costs (of which avoidance costs constitute a form) are supposed in p. 240 to be incurred and internalised in market prices. The text then correctly argues that the resulting increase in prices would presumably modify the behaviours, the level of demand as well as the level of production and the choice of production technologies. This brief analysis concludes implicitly that the static adjustment of aggregates for the amount of these costs is unfounded (my wording is more direct than that of the text).

Secondly, I address a more radical critique to any kind of proposals that aim, in ex post accounts of the economy, at reducing the nominal value of GDP or NDP by the cost amount that would have allowed to prevent or repair the deterioration of natural assets²⁸. These potential

environmental standards (incidentally, it may be noted that such exercises are different from the projections of possible futures within an analysis of strict sustainability).

²⁸Yet, it seems justified (see previous note) to choose a modelling approach of an economy that aims at estimating what would be the level of its GDP/NDP if producers and consumers had to comply with certain environmental standards (see the upper part of p. 241 which contains a close formulation).

maintenance costs are an estimate of the value of the consumption of the fraction of natural assets that is degraded because of the economic activities of a given period.

By definition, since they are potential/imputed costs, they have not been paid and the economy did not have to support them. Thus, the consumption/deterioration of a fraction of natural assets is a kind of involuntary capital transfer from Nature towards the Economy. The correct way to take into account this phenomenon, and these unpaid costs, is to increase the value of the final demand by the very amount of those costs. The final demand is then estimated at total costs²⁹. More precisely, it is the value of Resident or National Final Demand (RFD/NFD) which is the most interesting item for the analysis and implementation of environmental policy. The value at total costs of RFD/NFD should include unpaid costs on imports (capital transfer from the Nature of supplying countries towards the National Economy), and of course not to include unpaid costs on exports (capital transfer from our Nature to the Economies of other countries). We can immediately see that among other measurement complexities (and they are very significant) the above proposal requires the construction of a kind of matrix of international trade for unpaid costs. One can easily understand that such a matrix is implicit in many debates concerning climate change policies. However, it may have more general potential uses.

The principle of the above proposal was formulated in 1995 (André Vanoli: Reflections on Environmental Accounting Issues, *The Review of Income and Wealth*, June 1995, p.113-137), and developed by the same author in two working documents with limited circulation in 2007-2008 and in 2009³⁰. It is based on an accounting framework which considers Nature as a separate entity from

²⁹ In a different context, Jean-Louis Weber suggests also to estimate the final demand at total costs.

³⁰ “Quelques remarques sur le (et à propos du) papier de l’Agence européenne de l’environnement [Accounting fully for ecosystem services and human well-being, EEA Contribution to the “Beyond the GDP” Conference]” (Working paper, 6 December 2007, revised 28 March 2008). It was then followed by “Complément à la note des 6 décembre 2007 et 28 mars 2008” (Working paper 22 avril 2009). These two documents have just been merged into a single note,

the Economy (and not as a part of the “Economy”, which is an assumption generally used in the works on economic/environmental accounting). This framework also introduces a super entity called “The Planet”, which covers both Economy and Nature.

If the RFD/NFD accounts at total costs were actually established, the ratio of paid (or unpaid) costs to total costs would constitute a global indicator for the relations between the Economy and Nature. It would not be a measure of strict sustainability in the sense of chapters 3 of the report, but in any case it would be a global indicator of balance/imbalance in the relationship between Economy and Nature. Its actual position regarding sustainability in a broader sense would depend on its estimation methodology, notably to the extent that the reference to environmental standards could play an important role in the latter.

In this perspective, the current value of production and income aggregates of the economy’s national accounts are not changed a priori by the inclusion of the imputed maintenance costs of non-market³¹ natural assets. Neither GDP/NDP nor Income of the Economy is changed. The higher value of RFD/NFD at total costs leads, the level of economic income being constant, to a negative amount of saving counter-balanced by a capital transfer from Nature. The accumulation of these transfers from Nature to Economy constitutes the environmental debt of the Economy. The possible restoration of non-market natural assets by the action of the Economy may give rise to transfers from Economy to Nature and thus to a reduction of the environmental debt of the Economy.

In the accounting framework Economy/Nature/Planet as proposed, the respective contributions of Economy and Nature to the production of the Planet should be taken into consideration. An alternative concept of productivity change in the various economic

still work-in-progress: "Towards the estimation of final demand at total costs (paid economic costs *plus* unpaid ecological costs)" (in French for the time being).

³¹ However, these nominal values should be modified when subtracting from GDP and/or NDP the rent drawn from the extraction of (non-renewable) market natural resources.

industries/branches could be introduced as a complementary device. The output in volume (at constant prices), as it is measured in the economic accounts, would be attributed to the Planet and allocated between the Economy and Nature in proportion of costs paid (economic costs) and costs unpaid to Nature (ecological costs). Therefore, a larger Economy/Nature imbalance would lead to allocating to the Economy a lower share of the Planet output and, for given economic costs, would lead to a lower productivity level of the considered economic activity. Conversely, a decrease in the Economy/Nature imbalance would lead to allocating to the Economy a larger share of the Planet output and, for given economic costs, would lead to an increase in the productivity of the concerned economic activity. At equilibrium in Economy/Nature relationship (no ecological costs, no unpaid costs), the whole change in the volume of output of the Planet is allocated to the Economy. Between two periods of equilibrium, the change in productivity of the economic activity is the same as the one which appears today in economic accounts. Presently, this idea is still a mere draft. If it were to become fruitful, it would then meet an intuition that some national accountants had in the past. According to this insight, the issue raised by the consumption of non-market natural assets would not involve a change in nominal value of GDP/NDP, but would rather deal with a change in its volume.

The proposed treatment that has just been presented here in its main lines does not cover all the questions raised by environmental accounting. It only concerns what could find its place in the central conceptual framework of NA itself, modified by a specific arrangement for the representation of the Economy/Nature relationship, but it remains in the valuation system of Central NA. As a matter of fact, the estimate of unpaid environmental costs (potential maintenance costs) must be carried out at "transaction price equivalents ". These unpaid costs can then be aggregated with paid costs (market/transaction prices), which allows us to make then a measurement at total costs.

In contrast, the possibility of estimating the value of final services rendered free of charge by Nature to the population, or the value of certain intermediate services rendered free of charge by Nature to the producers, answers a different question. For example, what value can be attributed by the population to final services rendered by forests to hikers, waterways or seashores to bathers, etc.? Alternatively, what is the value to assign to pollination services rendered by bees?

Numerous research projects strive to answer such questions. Their relevance seems mainly microeconomic or micro local. As long as it is necessary to choose between various projects of protection/development of the environment, since all of them cannot be done at the same time, it seems legitimate to compare the potential maintenance costs, or the restoration costs, of certain endangered or degraded natural assets with the value attributed to the services rendered by those assets. We must however realize that not all valuations in question are homogeneous, i.e. they cannot all of them be interpreted as transaction price equivalents. What may be marginally acceptable (for specific projects) is not necessarily so if we are trying to estimate the total aggregated value of these very services.

Transition

Let's see where we are at this stage. Some people aimed at conceiving GDP, or a close aggregate from national accounts, as a measure or as an indicator of welfare/well-being in monetary terms. Chapters 2 of the Report that are devoted to quality of life/well-being showed that this purpose was vain, and strove to explore the complexity of the concept of quality of life/well-being and the difficulties of its representation, despite its necessity. Others requested GDP, or a close aggregate from NA, to become a meaningful sustainability indicator. Chapters 3 of the Report showed that the analysis of development sustainability was calling for a particularly complex modelling of the future. They carefully distinguished this type of modelling from current statistical observation of development. The lessons of the Report are not a surprise for any experienced national accountant. GDP (or any close aggregate from NA) cannot be transformed so as to become representative of quality of life or sustainability, a fortiori of both at the same time. Furthermore, it cannot be replaced by another type of single synthetic statistical entity that would accomplish all these performances.

After such clarifications³², the Report had still in chapters 1 to revisit the "classical GDP issues" taking stock of debates and developments in National Accounting during the last fifty years or so, in order to open or reopen tracks for progress. A slight simplification would consist in saying that these chapters focused on the standards of living (the Report specifies "material"), which are based on measures of income, consumption, or wealth, typically expressed in monetary terms as stated in § 6 of chapter 1, Part II. This paragraph adds: "These [the standards of living] are best

³² Of course, things did not happen chronologically this way in the work of the Commission. Its three subgroups operated in parallel. My reading of the Commission's Report identifies what appears to be ex post the logical leading thread of its reflections.

understood as one of the determinants of overall well-being of people or of their "human capabilities".³³

These specifications do place the issue of GDP and standards of living on the side of resources. These are multi dimensional, and people convert them in various manners in a “good life”, in the wording of the introduction of chapter 2 of Part II (p. 143). However, I will show further that there still remains in my opinion some ambiguity on this point in the Report.

I will not summarize this very rich chapter, but briefly comment on its main messages.

³³ Interestingly enough, we note in passing that the notion of standard of living, which is widely used in the statistical system, has not suffered from the disgrace that fell on the unfortunate GDP whereas it is quite consistent with the measures of economic accounts.

Making better use of modern NA potentialities and their development

The first message is to take better advantage of the NA framework as it presently exists.

Firstly, the fact that there are other aggregates than GDP in NA must be underlined: specifically aggregates net of fixed capital consumption, the net product or, more in line with the Commission's perspective of standards of living, the net income and notably the net national disposable income, which is a standard variable of national accounts (chapter 1, Part II, § 32), and the real net national disposable income which takes into account the changes in the terms of trade (France does not calculate it). Changes in the terms of trade are measured by the difference between the balance of foreign trade deflated directly by a price index chosen for this purpose (index of import or exports prices or a combination of both, or a general price index not derived from foreign trade) and the external balance, calculated as in usual GDP calculation, by the difference between exports and imports at constant prices calculated with their respective price indices. On this theme, very widely discussed in the literature, see the §§. 16.148 to 16.161 of SNA 1993 (Section K of chapter 16: «Measurement of real income for the total economy »).

Regardless of the diversity of opinions on the importance of such-and-such aggregate (for example, productivity analysts prefer the gross product to the net one), the emphasis placed by the Commission on this diversity of aggregates in the present national accounts must be approved. In fact, even some national accountants do not seem to admit that the three aggregates (among others) of Domestic Product (GDP or NDP), National Income (GNI or NNI) and National Expenditure (GNE) are measures of three different concepts, even if they are closely related, and not three different approaches for measuring GDP. This legacy from a now distant past, when one only sought to estimate the National Income, has the disadvantage of apparently giving too much importance to the Production aggregate.

We must also stress the need to understand that NA cannot be reduced to the calculation of some aggregates. The accounting framework as a whole is important, including the balance sheets

that are presently existing only in a few countries, and whose significance the Commission has stressed. In the third quarter of the 20th century, national accountants used to explain that the essential feature was the balanced and integrated system of accounts, and that the aggregates calculated meanwhile were somehow obtained as an additional benefit. Later on the trend was reversed. The attention was then more and more focused on the main aggregates only, whereas national accounting as a global construct tended to be underestimated, or even denigrated. Things began to change with the growing emphasis, particularly in Europe, on public deficit. People found out then that the NA framework allowed defining and measuring the deficit in a harmonised way (misuse of the recommendations is a different issue of course). More generally, the crucial step of harmonization of NA at the world level and the official and binding nature of the system of accounts for the European Union in the 90's have somehow "rehabilitated" NA as a discipline.

The Commission's Report goes in that direction when recommending focusing on the household perspective. Therefore it recommends implementing many elements of modern NA that many countries neglect to establish.

Thus the attention is brought not only on the disposable income of households, which has been a widely known concept for a long time, but also on the actual disposable income and the actual final consumption, two new concepts introduced in the SNA 1993/ESA 1995. Essentially, these concepts extend households' income/consumption so as to integrate social transfers in kind received primarily from Government. They allow a better representation of standards of living, which is significant for internal comparisons within a country and even more for international comparisons, and a better respect of the principle of invariance (to institutional changes) of NA when the public/private frontier shifts, like for instance in the case of education and health services. This leads the Commission to emphasise the efforts which have been exerted for some time to give a better measure of the evolution in volume of these non-market services.

In the same perspective, the Commission strongly underlines the importance to be attached to the measures of the distribution of income and consumption, so as to better assess the standards of living of the population. Those considerations on distribution, inequality and equity are also a recurring theme in chapters 2 on quality of life.

If indeed calculating measures of distribution is common practice in statistical activities, the macroeconomic results of NA deal traditionally with the population as a whole or, at most, with some of its major subcategories. They allow the calculation of means, without the possibility to characterize the distributions. On the other side, statistical surveys on households include micro data allowing for distributional analyses, but their global results are often different and less exhaustive than those of national accounts that are based on a variety of information sources. Hence the idea that prevailed until recently that it was not possible, or at least extremely difficult, to calculate a median or other distribution characteristics that would be compatible with the means of national accounts (see Box 7 p.114 of the Report).

The road to success goes through reconciling and integrating micro data and macro results. INSEE began a few years ago a very ambitious work with the participation of national accountants and households surveys specialists. The results for reference year 2003 have been published in 2009. This work went much further than the household accounts broken down by large socio-professional categories that the national accounts established in France from the late fifties to the middle of the 1980's. Through the use of macroeconomic accounts and five major household surveys, it partitioned the disposable income and the consumption expenditure from national accounts according to different socioeconomic criteria: standard of living (disposable income adjusted per consumption unit according to an equivalence scale), household composition, age, socio-professional category of the reference person. Households are distributed into five quintiles, each one representing 20% of the population, and ranked by increasing living standard. Social transfers in kind (education, health, etc.) that come primarily from Government, have been taken

into account and thus also the actual final consumption. This achievement represents an exceptional enrichment of the statistical information system of which we have been dreaming for half a century.

We cannot however ignore the fact that this type of work is extremely burdensome and delicate. This is why the wish expressed by the Commission (see § 92 of chapter 1, p. 118-119) to have a standard practice of complementing the average measures of income, consumption and wealth with measures that reflect their distribution when annual national accounts figures are published, seems extremely ambitious. Moreover, the Commission's wish is formulated in a somewhat ambiguous way when it continues: «Ideally such distributional measures should be conceptually compatible with average measures from the national accounts". If these distributional measures are somehow exogenous to the national accounts averages, their variations may be difficult to interpret. If they are to be more strictly based on reconciliation between micro data and macro results, the burden of the exercise when repeating it every year may prove incompatible with the available labour force in statistical offices. Moreover, because of the complexity of the exercise combined with changes in institutions and information sources, it is also likely that short-term variations in measures of distribution would also be difficult to interpret. Thus, it would probably be more realistic to program such an exercise on a five-year period, or at most on a three-year one.

Finally, in order to keep emphasizing the household perspective, the Commission recommends using satellite accounts to extend the measure of living standards to the non-market economic activities of households. It has in mind the project to resume and systematize the work that has been done in the past in a sporadic manner. The Report does not bring forward new proposals about this issue. Its suggestion to estimate the households' production of services for own use did not call in the past for any objection from national accountants as a matter of principle, as long as these services are rendered to other members of the concerned households (principle of potential exchange). It would be worthy to proceed regularly to such an estimate, for example every five years. Considering the numerous methodological assumptions that are required, the sensitivity

of results to the latter and the magnitude of the concerned amounts (which often represent about 30 % to 35 % of GDP), the Commission does not propose to introduce these services in the central aggregates of NA.

Assigning a monetary value to leisure, estimating it and including it in the income (and thus implicitly in the production) as well as in the households' actual final consumption is a much more delicate question even for a satellite account. Clearly, the national accountants' principle of potential exchange is not verified. The Report (see §§ 128-129 of chapter 1 of Part II) argues that leisure time is an element of well-being of individuals, which is hardly questionable. On the other hand, is it a resource to which could be assigned a monetary value to be included in the estimation of income/living standards? The Commission answers positively in this chapter by following the economists who treat leisure time as a consumer good whose price is the value of the marginal income which would have been earned by working more. It is not the place here to enter into detail about this debate. I only note that Chapter 2 of Part II is more than reluctant to the idea of estimating a monetary value for leisure. See at the top of p. 212 "... attempts to value leisure time in GDP reflect only the marginal valuation of leisure time, while major changes in society that influence the amount and use of leisure time cannot be valued in this perspective." This formulation of chapter 2, Part II means that the determination of leisure time does not essentially depend on free individual choices made at a given time as a trade-off between work and leisure, but on collective structural choices of societies. The United States example, in contrast with European countries, is a good illustration of a difference of choice between getting more goods and services for consumption and having more leisure time (see § 129 of the Report). Incidentally, we may be led to think that one of the main ways to ensure sustainable development at the world level would be that in the future the American society chooses to work less, and to slow down or even reduce its consumption of goods and services, and thus benefit of more leisure time. One can argue of course that giving a monetary value to leisure could show people in the United States that their

income/consumption would not decrease because of this structural change. I strongly doubt of the persuasive nature of such reasoning in terms of extended income/consumption. In fact, what we should strive to demonstrate is that a collective choice in favour of a lower consumption of goods and services and an increase in leisure time would enhance the quality of life/well-being of US inhabitants. But this belongs to the problematic issues of chapters 2 of the Report devoted to the quality of life/well-being. Leisure time is a resource, whose contribution to quality of life depends on many factors. Its estimate in monetary value brings nothing from this point of view to the data on leisure time and the uses which are made of them. It is paradoxical to try to include in the value of production and consumption what is somehow typical of the non-production.

The possible inclusion of leisure among monetary determinants of quality of life/well-being is indeed part of a theoretical context in which the monetary values (prices) are directly interpreted in terms of welfare. It relates to approaches which, after the Measure of economic welfare by Nordhaus and Tobin, aim at building an aggregated monetary measure of welfare. This is a totally different approach from the ones of chapters 2 in the Report.

The relationship between market prices and welfare/well-being

An insufficient clarification by the Commission

From this point of view, I am not sure that chapters 1 have sufficiently clarified the question of the relationship between market prices and welfare/well-being. Thus, the conceptual impossibility to interpret changes in GDP or in National Income in terms of changes in the global welfare/well-being of a society may not be clearly perceived by readers of the Report. I was surprised, I should say, not to find any reference in the Report to the discussion in *Economica* that was initiated by John Hicks in 1940, which specifically focused on this issue. I strove to summarize very briefly this debate in "A History of National Accounting" (IOS Press 2005) p. 276-279, p. 296-297 and 299. I quote: "From this attempt [*the one by Hicks*] and from the long discussion that followed, it is only possible to conclude that, unless assuming very peculiar conditions that do not realistically reflect the states of the economy, it is not possible to translate the observed changes in sets of goods and services, even strictly limited to market ones, as a measure of welfare, understood as a change in satisfaction or utility for society as a whole" (p. 296-297). My last reading on this very complex subject is Amartya Sen's article "The Welfare Basis of Real Income Comparisons: A Survey" (*Journal of Economic Literature*, March 1979, p. 1-45). What I mentioned above of my conclusion on this theme did not seem to me in contradiction with Amartya Sen's analyses. Differences in initial allocations (inequalities) and in preferences of individuals, and the aggregation issues they raise, are at the origin of the encountered difficulties.

In the same book, I wrote at the beginning of Chapter 7, devoted to "National accounting and welfare": "[*in the framework of neoclassical theory*] Prices are related both to marginal utilities and marginal costs *through* marginal rates of substitution. But, within a perspective of macroeconomic measurement, costs and utility are not in equivalent positions. "Costs" are finally expressed in terms of factors income and of taxes on production. ... In contrast, prices, although

they reflect marginal utility, do not measure the average utility of products "(p. 274). I should have written "total" rather than "average" and emphasized more that, whereas income and taxes can be observed, considerations on utility result only from theoretical analysis.

Now, I have the distinct feeling that in the last decades a kind of accepted dogma tended to dominate in practice, according to which, at least implicitly, the aggregation of prices of various products was interpreted as an aggregation of utilities. Of course, no sign of this can be found in chapters 2 (quality of life/well-being) which give a large importance to inequality issues, to the question of differences in preferences and to people's ability to transform available resources into quality of life. Chapters 1 however present on this question some ambiguous formulations. It is in particular the case on the role of market prices, where it is said (II, 1, § 8) " When markets are competitive and in the absence of externalities, relative prices of goods and services mirror the relative values that individuals puts on these commodities. So, in principle, weighting products with their prices implies weighting them with their value for each individual in society." Is not the wording "value for each individual" ambiguous? If it is marginal utility as it seems (which is explicit in § 4 or § 61), and assuming that each individual actually allocates his purchases in order to equalize the marginal utility of the various products he acquired so as to maximise his total utility, this does not tell us anything about the total utility that he gains from it. His consumer surplus normally varies according to the product categories. In addition, not all individuals have the same preferences³⁴. Further on in this chapter, on the question of price indices, and notably

³⁴ All this can be explained by way of an example. Take for instance the case of aspirin. Let's suppose that at a given time, because of a differential technical improvement, its production cost declines and, in the absence of rent, it is also the case for its supply price. Now, let's suppose in a given economy that demand for aspirin is completely inelastic in relation to its price. When aspirin price decreases, its marginal utility for consumers decreases compared to the one of other products. But this does not mean that "its value for each individual in society" went down. The most probable is that the incorporated differential technical improvement has increased the consumer surplus on all purchased quantities of this product that are acquired at a lower price. In our assumption of price inelasticity of demand for aspirin the total

regarding the one known as «cost-of-living index", § 98 specifies incidentally: «A point of particular relevance from a welfare perspective is the question about ‘*whose*’ price index is evaluated. Often, conceptual discussions about price indices are conducted as if there were a single representative consumer." However, later on this paragraph brings up only the fact that different people buy different baskets of products, and thus marked differentials in price changes for various products may lead to different price indices for different people. This paragraph does not say anything about differences between consumer preferences. Nevertheless, when interpreting the relationship between market prices and their variation on one hand, and welfare/utility and its change on the other hand, differences in preferences matter.

From this point of view, the continuation of the already quoted paragraph 8 increases the risk of ambiguity. It refers to the theoretical development by Weitzman 1976 ("On the Welfare Significance of National Product in a Dynamic Economy", *The Quarterly Journal of Economics* 90: 156-162). Under some very restrictive conditions, it establishes that changes in net domestic product are a good gauge of changes in economic well-being. And the paragraph continues by stating: «This establishes – albeit under restrictive conditions – a direct link between NDP and economic well-being." It should be noted that one of the restrictive conditions of Weitzman model that the paragraph does not stress is the assumption of a representative consumer maximizing his

utility of aspirin for consumers does not change, whereas its marginal utility, which is supposed to be measured by its price, decreases. In addition, aspirin consumers may slightly increase their demand for other products and thus the utility that is provided to them by the consumption of the latter ones, etc...

My presentation of the price/utility relationship is similar to the one that is described in chapter I of the 1993 SNA. This text specifies (§ 1.76): "... changes in the volume of consumption, for example, are not the same as changes in welfare. The distinction between the quantity of some good or service and the utility derived from consuming it is clear enough at the level of an individual good or service. For example, the quantity of sugar consumed by households is measured in physical units. It is measured quite independently of any utility that the households may, or may not, derive from consuming it." (I did not draft chapter I!).

intertemporal utility. With this “deus ex machina”, all the problems discussed in the *Economica* debate disappear, but it is an illusion. This is why in my opinion it would have been necessary to revisit the discussions of *Economica* and, if today their conclusions are not anymore considered relevant, to explicit for what reasons. Short of this - here or in other circumstances - economists might maintain a theoretical ambiguity on the relation between GDP/NDP or GNI/NNI and the measurement of welfare/well-being, even if it were qualified of “economic»³⁵. One should at least have explained that these restrictive conditions, including the one of the representative consumer, and their unrealistic character when trying to represent ex post the real world, exclude the theoretical possibility to suppose, in real economies, a *direct link* between the changes in these national accounts aggregates and changes in quality of life/well-being. The absence of a direct link is precisely what appears to be one of the starting points of the developments devoted in chapters 2 of the Report to the exploration of the concept of quality of life/well being (see for instance p. 143-144). In the perspective of these chapters, there is no such thing as a separate notion of economic well-being³⁶ that other dimensions would somehow complete. The Executive Summary places material living standards (income, consumption and wealth) among the key dimensions to be taken

³⁵ In my view this theoretical ambiguity is a source, if not the main source of the confusion maintained in many debates of the last fifty years on the interpretation of GDP or NDP or final consumption as an alleged measure of social well-being, and thus of the criticisms on its shortcomings in this role. I would go so far as to say that it is the conceptual root of all attempts to adjust such an aggregate by addition or subtraction of items that are expected to add or subtract elements to welfare, i.e. increase or decrease the total utility, supposedly measured by the aggregation of market/transaction values.

³⁶ In order to avoid perhaps any misunderstanding, I should add some qualification to the sentence I wrote. What a number of people call “economic well-being”, after adjusting final household consumption to take into account for instance non-market activities of households and social transfers in kind, is generally an expanded measure of living standards. The latter remains in the domain of means/resources. However, proposed measures of “economic well-being” sometimes combine some components that are means and others that are results, which of course can be confusing in the perspective of chapters 2 of the Report.

into account, while specifying "At least in principle, these dimensions [*listed in the summary and developed later in the chapter*] should be considered simultaneously". In this context, one may refer to the remarks I formulated earlier, when commenting on chapters 3, on the sharp distinction they carry out between the estimate of current quality of life/well-being and the question of development sustainability, as well as on the conceptual interpretation problem that this gap brings.

There seems to be no doubt that the above considerations raise a substantive question which the observer of the real economy should not keep seeing avoided: "What is intended to cover the concept of utility (welfare)? What is a consumer expected to take into account when making a spending choice: the effects of an immediate satisfaction? the more or less delayed effects on his future satisfactions, through for instance the positive or negative impact of certain consumptions on his health? the indirect effects on satisfaction of others? Which boundary between the utility/internality and the externalities? »

The Commission pays a surprising reverence to the concept of "defensive expenditures"

Another ambiguity in chapters 1 of the Report - which I do not know actually where to logically place it in the sketch of this viewpoint - comes from the treatment of the so-called "defensive expenditures". I was surprised to notice the Commission considering with a lot of reverence an issue, which in the opinion of national accountants was poorly stated and essentially intended to conceive the product/income or consumption aggregate as a measure of welfare. The Report discusses this point in Chapter 1 of Part I, § 25-27, and in Chapter 1 of Part II. § 48-54. Surprisingly enough, it does not question the relevance of the concept of defensive expenditures per se, but only the empirical difficulties in its implementation.

Broadly speaking, we can say that two versions of this concept were successively elaborated upon time. The first version, which did not use the term "defensive expenditures", considered that in order to transform the national income, and later on the national product/ income, into a measure of welfare, the final expenditures should not include the acquisition of goods and services which are not per se a direct source of utility/welfare for individuals. These expenses were to be regarded as intermediate and not final. That was Kuznets' point of view, and it was shared after him by authors like Nordhaus and Tobin, Eisner and others whose proposals for adjusting national accounts aggregates did not take place in an integrated framework of NA.

The emerging NA in the forties did not adopt Kuznets' view that the objective of the national income/product was to measure welfare and its variation. From this point of view, NA intended to be more neutral. In addition, it is clear that in an integrated framework there cannot be intermediate expenditures which would somehow be suspended "in the air". Intermediate uses of

goods and services are always included in the production of other goods and Services³⁷. Final uses therefore cross the boundary of the production domain. Thus, it is for basic conceptual reasons that NA rejected this first form of the doctrine of "defensive expenditures".

Commuting to work expenses can be linked to this first version of the concept. As they consist in practice of purchases of goods and services by households and as the corresponding resources come from compensation of employees, NA treats them as final consumption expenditure. There was much discussion about it in the seventies, and it was concluded that this treatment had not conceptual justification (even if questions were raised about what employees could possibly do during their transportation time) and that it should be considered preferable in principle to regard them as intermediate consumption of employers, and not as part of the value added. But the final conclusion was that the practical disadvantages of a change in their treatment were significant and that, all things considered, it would be better to decide by convention to keep the former practice after clearly explaining its conventional nature.

The Report re-opens the issue and proposes (§ 49, 3rd indent) to extend the limit of households' production in order to include a production of (road) transportation services provided to the employers and recorded as an intermediate consumption of the latter. This treatment would certainly present the advantage of not having to exclude the corresponding expenditure from household accounts but would only require reclassifying them between final consumption and intermediate consumption expenditure.

In contrast, there would be several disadvantages. First, as the suggestion is probably to implement this treatment permanently and not only from time to time for illustration purposes, it seems hardly possible to have thus a partial extension of the boundary of production (notably

³⁷ The Report recalls effectively this rule at the beginning of § 50 of Part II, but oddly enough it neglects to do it when introducing in § 48 the notion of defensive expenditures, just before addressing in the following § the implementation issues.

through valuation of time spent in driving) whereas, for the general question of production for own final use in household, the Report proposes a treatment in satellite accounts and not as part of NA central framework itself. Secondly, road transport services are not only produced with labour and equipment (a car). Other inputs such as fuel, maintenance, repairs, insurance, etc.... are needed. Therefore, the corresponding production account of households would be rather difficult to build and the calculation of their final consumption would also be complicated. Finally, commuting expenses should also include the purchase of tickets for train, bus, subway, etc... And what the Report proposes to do with them is not at all clear (include them both as input and output in this extended production account? Take also into account the time spent? Or what else?). In addition, the Report suggests to balance the employers accounts, not as one could have expected it by reducing the wages they pay in due proportion, but by financing this additional intermediate consumption by.... a transfer from households to producers. Then, how can we reduce the value-added of the latter, as it is assumed in the continuation of the text? In fact, if we want to decrease it, we should compensate the increase in intermediate consumption by a reduction in wages paid and not through a transfer from households to the employers, which additionally would be purely arbitrary (from which sub-account to which sub-account?).

The solution which has been primarily considered in the seventies was simpler in its principle: estimating the break-down by products of the actual commuting expenditures (without building a household production account for this purpose), deducting them from the final consumption of households, including them in the intermediate consumption of employers, reducing in due proportion the wages paid and thus the value-added of these employers and GDP. The practical difficulties and the impact of such changes on the link with the wages statistics and possibly on the working time and income statistics as well, notably when broken down by category of households, have led to the wise decision to retain the convention presented earlier. Having in

mind that commuting expenses to do not represent an equal fraction of wages, that they vary depending on the distance and the means of transport used, is enough to be urged to caution.

The second version of the concept was mainly proposed in discussions relating to the environment, especially the natural one, but also the social one. It does not seek to demonstrate that the concerned expenditures have to be excluded *by nature* from national product/income. It considers on the contrary that they should be excluded on the ground that their positive effects on utility/welfare are only offsetting earlier losses of welfare. Therefore these expenditures do not increase the welfare of individuals and societies. Such expenditures would cover for example expenses that remedy any deterioration to the natural environment (it is thus proposed to exclude the environmental protection expenditures from product/income) or expenses resulting from deterioration of social environment (e.g. security expenditures).

Incidentally, it should be noted that there is a large difference between the two versions of "defensive expenditures" presented here. When Kuznets proposes not to include in national income expenses related to the complexity of modern world (bank charges or some professional obligations as club membership for example), his argument is that these do not constitute direct sources of welfare for individuals and not that they would offset earlier losses of welfare (except if we were adopting a perspective like the fall from earthly paradise or at least a reference to the "good old days"). From this point of view, the retrospective extension to Kuznets of the notion of "defensive expenditures" is not strictly correct³⁸. On the other hand, this expression is actually justified in the second version, since the concerned expenditures are due to previous losses/damages to sources of welfare.

National accountants did not respond more positively to requests from proponents of the second version than to proponents of the first version. Their reasons are fundamental. First, they remind us that NA, in its integrated and conceptually consistent central framework, does not seek to

³⁸ It does not seem to me that Kuznets himself has used this expression, but I may be wrong.

measure welfare. Thus, the criticism that they would not correctly measure it is simply mistaking its target. Then, they explain that, as in the case of intermediate expenditures suspended "in the air" of Kuznets and others, there is no room in their integrated framework for "non final expenditures that would remedy previous losses of welfare or sources of welfare" which then would also be "in the air". Goods and services originating from the production processes of the NA central framework are resources which will be later on transformed into quality of life/well-being (see the beginning of chapters 2 of the Report).

However, the question is more subtle, because stocks of assets are involved. We should distinguish stocks of economic assets in the sense of NA (machinery, buildings, etc.) and stocks of assets that NA do consider as economic assets (atmosphere, rain forest, etc....). If the "defensive expenditures" in question remedy previous (or concomitant) degradation of economic assets (those which are included in the balance sheets of NA), they should not increase the concerned stocks above the levels reached until such degradation occurred. That is what NA recommends in principle for the establishment of the accounts of economic assets. For example, if an earthquake destroys buildings, the estimated amount of destruction should be subtracted from the value of the stock of buildings before this natural disaster occurred (whether it is done in practice is another question, of course). Then the value of the rebuilt buildings will increase this stock. But we have to examine carefully how NA proceeds. At the time of destruction it will not deduct the value of the destroyed buildings from the GDP, NDP or Income of the period. It is recorded neither as a negative output nor as an additional consumption of fixed capital, but the loss is registered in a special accumulation account (called "other changes in volume of assets"). Thus indeed neither GDP nor NDP are affected, since it is not a flow related to the production/consumption process, but the value of the stock of buildings is actually reduced in principle. At the time of reconstruction, the

production of the construction industry will then be offset by a GFCF in buildings³⁹. Actually this case advocates not against the way GDP is calculated, but in favour of the actual establishment of complete balance sheets and accumulation accounts.

I emphasized this case for some length because, if we wish to understand certain discussions, it is important to bear in mind the conceptual framework of NA *in its entirety*, and in particular the fact that the relationship between income and change in net worth/wealth is often more complex than what implies a simplistic approach of the income/capital relationship, either in economic theory or even in business accounting.

Let us now consider the case of degradation of non-economic natural assets (atmosphere, sea). These assets are not included in the balance sheets of the NA. We must therefore adopt for them a treatment of another type. I presented earlier in this viewpoint the solution that I consider the most relevant to describe the relationship between Economy and Nature, in an accounting

³⁹ What has been explained in this § corresponds to the treatment that was made explicit in the SNA 1993/ESA 1995 when balance sheets were introduced. Previously, the incomplete accounting structure of the SNA was not allowing for a clear and complete presentation of that kind of question. The rationale of the above treatment thus remained implicit. However I would candidly say that this defect did not justify in my opinion one of the best-known criticisms of standard GDP, that the Commission reminds us in p. 265 of the Report, and according to which "viewed as a well-being indicator, it can send the aberrant message that a natural catastrophe is a blessing for the economy, because of the additional economic activity generated by repairs". I read in the 5 March 2010 edition of *Le Monde* that the recent earthquake in Chile could require reconstruction costs equivalent to 15% of this country's GDP. There is no need to be a senior economist, nor a particularly experienced national accountant, to understand that reducing by 15% the aggregated value of Chile's production in such a situation would be an "aberrant message". Indeed, the recall of p. 265 deals with GDP "viewed as a well-being indicator". But, what arrogant superiority gave the right to those who formulated such criticism in the past to ignore what national accountants said, i.e. that GDP was above all an aggregated measure of production? And if they wished to interpret it as a measure of well-being, those critics were mistaken. In other words, in the terms of the fable: "If the monkey who survived the storm mistakes Piraeus for a man, is this the fault of the Dolphin who rescued him?"

framework which also includes the global Planet entity. The degradation of natural assets by an economy is a consumption of natural assets. The value of this consumption, at potential (unpaid) maintenance costs, should be *added* to the value of the final demand at paid costs, so as to obtain final demand at total costs, and a capital transfer from Nature to Economy should be registered.

This degradation/capital transfer accumulated - that is the accumulation of unpaid costs - would appear in the balance sheets of the economy as an environmental debt. In the accounts of Nature would appear a, negative, value for this amount of accumulated degradation of natural assets⁴⁰. In such a treatment, it is not necessary to estimate the total value of the stocks of natural assets – a probably insurmountable task - but only the value of accumulated degradation – a huge task but of considerable interest for environmental policies.

The case of non-economic assets of societal type (security, governance, etc.) raises much more difficult questions. In the analysis of sustainability within an extended wealth approach, these assets correspond approximately to what has been systematised for a few decades under the term of "social capital". Some dimensions of quality of life examined in chapters 2 refer to them (see Political voice and governance, social connections and relationships, insecurity). At present time, one is encountering great difficulties to construct indicators that would be somehow representative. The possibility of a monetary valuation of the social capital seems presently very dubious. Some believe that this will never be possible. In any case we are infinitely far from being able to actually treat, for example, security costs as investment expenditures in social capital, as suggested in § 49 of the Report. The analysis and the possible measurement of levels of security/insecurity in various situations which fall within the dimensions of quality of life in the sense of chapters 2 of the Report hardly seem to be able to meet an extended approach of fixed capital formation.

⁴⁰ I will not recall here all the details of symmetrical accounting entries in the case of a later reconstitution of non-economic natural assets by the Economy. This reconstitution would lead to a capital transfer in kind from the Economy to Nature, and a decreasing influence on unpaid environmental costs and total costs of final demand.

But then, some would say, should we resign ourselves to include in the final expenditures of the economy expenses like those from the field of security, which aim to compensate for previous or potential degradation certain situations that are considered better than the present state of security/insecurity? I must confess that this question does not trouble me since for a long time national accountants have pointed out that many of our actions, and among them our expenses, aimed at preventing or repairing degradations concerning ourselves, our assets or our environment in the broadest sense. The 1993 SNA develops a little bit this view in its § 1.76 to 1.81. In an implicit reference to the concept of defensive expenditures it concludes: "Pushed to its logical conclusion, scarcely any consumption improves welfare in this line of argument." (§ 1.81)⁴¹. The essential flaw of the conglomerate of questions grouped under the term of "defensive expenditures" is that they are part of an approach seeking to interpret the change in GDP/NDP in terms of change in welfare, which is precisely what this aggregate does not seek to do.

To be honest, what becomes of suggestions about "defensive expenditures" in the messages from chapters 1 of the Commission's Report is not entirely clear to me. We find these developments in section 3 of chapter 1 of Part II, which is devoted to the recommendation to focus on other national accounts aggregates than GDP. However, they take rather the form of various specific comments on GDP, just before section 4 which recommends broadening the households' perspective, and then no more is said on this issue.

One can question more thoroughly the status of certain considerations on the extended measurement of economic activity of households. The text of chapter 1 starts by presenting a series of questions on which there is no theoretical disagreement, such as the development of a satellite account for recording the production of own-account non-market services by households, followed by others who are still highly controversial, like the monetary valuation of leisure. It ends with a

⁴¹ See notably in "A History of National Accounting" (p. 282-283), Box 48 entitled "The relationship between GDP and welfare measurement according to the SNA 93".

short subsection 4.10 on the allocation of total income, which is not explicitly defined, but which, according to section 4.9 above, can include leisure. In contrast, the main messages and recommendations which are located at the end of the chapter do not seem to go so far. Recommendation 5 ("Broaden income measures to non-market activities") deals with changes in living standards that can reflect the shift from a non-market to a market provision of services that households previously produced for themselves, a formulation that does not usually cover leisure activities.

We perceive throughout chapters 1 some nostalgia for the attempt by Nordhaus and Tobin. If we remember that their aggregate of adjusted consumption was entitled "A Measure of Economic Welfare", one might wonder if it is not this idea that chapters 1 had in mind, although they do not use this expression, rather than a strict extension of living standards measures to which in principle these chapters are confined. Chapters 2 on quality of life/well-being seem to exclude, from the very nature of their approach, a notion of economic well-being that would be in a sense an intermediary step towards the observation and measurement of the quality of life. I have previously noted their obvious lack of enthusiasm in the face of attempts to estimate leisure in monetary terms.

Keeping on questioning chapters 1 leads to wonder about the very mandate which has been given to them, or at least the way they chose to interpret this mandate.

Back to the measurement of current economic performance

According to the interpretation I proposed of the entire Report, we can say that chapters 1 had to deal with the measurement of current economic performance but not with the measurement of sustainable economic performance. It is quite clear indeed in chapters 3 that the current ex post economic observation of NA could not aim at measuring aggregates which could be called "sustainable" (sustainable NDP or NNI in particular). On this point, chapters 1 and 3 are fully consistent.

On the other hand, chapters 2 show that the current quality of life/well-being is the result of the transformation of a set of resources (i.e. means). Although these are not the only ones, they include the economic goods and services, whose field may vary depending on the choices that have been made. The current NA measures the latter in monetary value and these are expressed in terms of living standards in household accounts.

From the point of view of chapters 2, the objective of chapters 1 could only be to measure the living standards and their variations, as well as possible. One could thus define economic performance by the evolution of standards of living. The object of chapters 1 would have been in this perspective to define and measure economic performance in this sense. Such an approach seems however too narrow since it would mean to measure economic performance by total and/or per head GDP or NNI possibly complemented, and thus the corresponding living standards. The measurement of economic performance through GDP has been rightly criticized for approximately half a century. But the objective of some of the criticisms was to equate economic performance and social welfare or well-being. Accordingly, either one claimed for the transformation of GDP/NDP in this sense, or one rejected it as a measure of economic performance (it could be kept as an aggregated measure of production) and therefore another aggregate was proposed to meet this end.

The equivalence of economic performance and variation of "economic welfare/well-being" would have had however the major disadvantage to maintain the confusion between the resources/means and the results of their transformation by people into quality of life/ wellbeing, and therefore between the measures discussed in chapters 1 and those suggested in chapters 2. Moreover, it would have taken the risk to leave aside or to marginalize the considerations concerning the relations between Economy and Nature, except if one reasoned in a perspective of sustainability analysis as defined in chapters 3, whereas the latter were based on a net distinction between current measurement of quality of life/well-being and all attempts to quantify sustainability.

So? Was the Commission's Report inevitably leading to a dead-end as regards the measurement of current economic performance? I do not believe so. But the solution ("the way out" could have said the Report) implied that the Commission, *after* its analyses and recommendations of chapters 2 and 3, would discuss explicitly in chapters 1 the problem of definition and measurement of *current economic performance* (I am following the logical order of my reading of the Report).

The notion of performance requires a comparison between results and means so as to take into account the efficiency of the concerned economy. Results, in the perspective of economic performance, are living standards calculated from (total or per head) GDP/NDP, including periodically the own-account production of services by households estimated in a satellite account. Means are the stock of human resources and the stock of economic assets/capital that are available. They can be taken into account by measures such as the apparent productivity of labour and the apparent productivity of economic capital, completed at least by the employment rate and the unemployment rate of human resources.

Average economic standards of living are not sufficient to measure the economic performance. We should also characterize their distribution.

However, in order to appreciate the economic efficiency of a country, it is important to characterize the general structure of people's timetable. To do so, one can for instance consider the ratio between leisure time and the remaining time after deduction of the time required for essential acts of existence (sleep, food, personal care)⁴². This ratio should also be characterised by its distribution.

Finally, economic performance cannot be assessed without knowing if the variation of living standards, etc..., has been accompanied or not by an imbalance in the relationship between Economy and Nature, and how this imbalance has varied. In order to measure this imbalance I recommend in principle, as it was briefly outlined earlier in this viewpoint, to estimate the relationship between unpaid ecological costs and the total of paid economic costs and unpaid ecological costs. Failing to measure this ratio, which requires considerable developments of information systems and analyses, one should use some physical indicators as significant as possible of the change in major categories of natural assets (climate, water, biodiversity, etc...) due to economic activities of production and consumption. For now, we are mainly beginning to measure the carbon footprint that the Commission recommends rather than the ecological footprint. On this point, it should be noted that my own empirical conclusions are close to the ones of chapters 3 of the Report, but with different intents. For the Commission, these indicators are meant to be included as substitutes in a small sustainability dashboard. For me, at this stage, they are intended to be part of a small group of indicators representative of the current economic performance.

I will now summarize my suggestions on the definition and measurement of economic current performance.

⁴² This remaining time is the sum of paid and unpaid working time (including commuting) and leisure time. It is of course possible to take the complementary ratio between the total working time and the total remaining time.

One could define the current economic performance as the current total and per head economic growth (GDP/NDP, GNI/NNI, living standards), *taking into account the efficiency of the social process of economic production*. This efficiency can be estimated in a synthetic manner by considering human resources brought into play, the productivity of labour and capital, the distribution of living standards, the general structure of people's use of time and finally the balance/imbalance in the relations between Economy and Nature.

With such a definition, the current economic performance cannot quite probably be measured by a single monetary aggregate or a global composite index. We need to express it by a set of indicators, which should be as narrow as possible. The above paragraphs suggest building some kind of indicative dashboard of the following type:

Dashboard for current economic performance

- Indicator (s) of current total and per head economic growth (e.g.: GDP/NDP, GNI/NNI, living standards),
- Indicators of the efficiency of the social process of economic production.
 - ⇒ . General structure of people's use of time (e.g.: ratio between working time and remaining time after deduction of time required for vital basic needs)
 - ⇒ . Human resources used (e.g.: rate of employment/unemployment)
 - ⇒ . Apparent productivity of labour and apparent productivity of non financial economic assets
 - ⇒ . Characteristic (s) of distribution of income/living standards
 - ⇒ . Balance/imbalance in the relations between Economy and Nature (ideally the ratio between unpaid ecological costs or paid economic costs and the total costs; if not, physical indicator (s) such as the carbon footprint).

Such a dashboard of about ten indicators would not be meant to be substituted for the analyses, but rather to facilitate a valuable preliminary analysis. It could easily be supplemented for example with an indicator that would be characteristic of an economy's propensity to indebtedness.

Let us stress that such a view of current economic performance remains rigorously located in the field of economic resources (means). According to the approach of chapters 2, these economic resources (means) are, among other types of resources (e.g.: institutional resources for governance, etc.), transformed into results, in terms of current quality of life/ well-being, which one could also name current social (or societal) performance. Beyond these current measures, chapters 3 focus their attention on the long-term sustainability of these performances.

Conclusion

The essential message of the Commission is comforting for the old national accountant that I am, although as we have seen I made some critical comments.

This message is that it is pointless to seek to figure out the complex set of phenomena that covers the representation of economic activity, quality of life and sustainability of development by a single measure. GDP is a measure of production, not of well-being. Even if it could or should evolve, this aggregate or a different one from NA cannot be transformed into a measure of well-being/quality of life of society, or into an indicator of sustainability of development, and a fortiori into everything at the same time.

One should not confuse the resources (means), among which are GDP and the economic goods and services which constitute it, and the results of the transformation of these resources (including also non monetizable ones) into quality of life. Defining and trying to measure the latter involves a major progress of observations, of social statistics and, jointly, a complex research work.

Also and perhaps more surprisingly for many people, the Commission considers that there must be a clear distinction between the current observation of economic activity and quality of life and the understanding of sustainability of development in the strict sense. The latter requires an extremely complex modelling of the future if we hope to detect the non-sustainability of current development, and wish to estimate the distance between this one and a situation where sustainability, i.e. the permanence of current quality of life/well-being, would be maintained for future generations.

Implicitly, one can say, the approaches followed by the Commission in order to clarify such a broad set of issues are not based on a single conceptual model. I mean here a theoretical model that would be valid for representing both the relations resources/quality of life in the

observation of present time and the relations present time/future(s) in an anticipative analysis of sustainability. Truly speaking, many economists believe that such an integrating conceptual model does exist. It is the case for instance of the theoretical framework to which belongs the net adjusted saving approach from the World Bank, but it is based on very strong and very restrictive assumptions. This notably implies that all the resources available to individuals take the form of stocks of assets, that the changes in stocks of resources represent the changes in quality of life resulting from their transformation, that all these stocks of resources can be estimated in monetary value, that a representative consumer knows the present and the future and that he alone represents society as a whole.

Such assumptions are clearly unrealistic, as noted by the Commission. They do not correspond to the approach for defining and measuring the quality of life as recommended in the Report. They cannot hinge on the conceptual framework in which current national accounts are established. The Commission circumvents these difficulties by making the assumption that we have been able to measure at the present time the quality of life/well-being such as defined in chapters 2 of the Report. This approach, which is usual among economists, does not avoid certain ambiguities, which I have emphasized in my comments.

A second reason for a national accountant to be satisfied is that the Commission insisted upon taking better advantage of what modern NA embraces. In more than half a century, NA has evolved a great deal in its representation of economies which have become more complex. It is not obvious that the majority of economists have been aware of this development. The analyses of the Commission in chapters 1 placed a correct emphasis on NA potentialities that national accountants themselves sometimes ignore or underestimate. That is the case for instance of the treatment of social transfers in kind from General Government that considerably improves the measure of income, consumption and therefore the living standards of households.

To some non-negligible extent, the Commission proposes a kind of new weighting of the relative importance granted respectively to various items of Central NA and satellite accounts (for example, the estimation of non-market services rendered to households by themselves). It should also promote the development of a considerable set of measures, which have been sometimes mentioned in the NA debates but that remained unproductive for too long. It concerns everything that deals with the integration of results from microeconomic surveys into the NA macroeconomic aggregates, and the allocation of some chief variables of the macroeconomic household accounts like income, consumption, living standards, saving, and up to the balance sheets, between categories classified according to basic social criteria.

I underestimate neither the importance of this kind of "rehabilitation" of National Accounting and more generally of statistical observation, as the one and the other have been a little too often and too unjustly blamed during the last decades, nor the difficulty of addressing the challenges generated by the implementation of the Commission's recommendations. The latter stressed repeatedly in its Report the necessity to expand statistical observations. Let us take as examples the regular implementation of time use surveys or subjective well-being surveys. However, the Commission should maybe have more strongly emphasized the fact that statistical observation is costly, and the need for our society to realize that what we want to know does not come out of the blue.

Since it alluded to the frequent loss of public confidence in statistical results (see the Executive summary, § 4), and to the obvious fact that statistical offices must learn to better communicate with the public, the Commission could also have underlined a fundamental point that seems sometimes forgotten or underestimated in the debates. The purpose of statistical observation is to bring results that individuals or groups cannot directly perceive by themselves. Therefore, the fact that these results differ from the citizens' perception is normal. Then of course critical discussions of methodology and statistical results are fully legitimate and necessary.

There is an implicit message of the Commission about the quality of life/well-being upon which one should insist. The Commission has mentioned many possibilities. Even if it has marked preferences, it has not come up with any well thought out solutions, but with problematic steps and methodological approaches that are open to various possibilities. The Commission has tried to clarify in general terms what can be asked of official statistical institutions: the development of observation, and what is relative to the ethical choices that society must resolve.

Since the concept of quality of life is flourishing and its domain is quite large, it seems necessary to adopt an approach with a global visibility from both conceptual and institutional points of view. This is peculiarly true if we want to avoid repeating the deceiving experiences of disconnected projects such as the development of social indicators and the building of a System of social and demographic statistics like the one proposed by Richard Stone.

I propose to adopt a sort of unifying banner which could be called “A System of observation and measurement of quality of life”. Statistical operations themselves are usually subject to consultation and dialogue between producers and users within for instance the framework of an official body such as the French “National Council for Statistical Information”⁴³ and must continue to do so. However, the content of the system I propose under the above title goes further than the idea of an indispensable statistical coordination. It comprises also study, analysis and research work, including attempts to develop synthetic indicators that could be representative, though relatively small in numbers. The Commission has clearly stated that the pursuit of this objective required normative choices which were not to be part of official observation statisticians’ role. In contrast, analysts and researchers are free to introduce in their work the normative choices that they want, provided that they respect the ethical obligation to make them clear.

⁴³ The « Conseil national de l’Information Statistique » (CNIS) in France is a body that represents social partners, users and producers of statistics.

However, if we wish to obtain results which improve and facilitate the social debate, it would be more productive if some of them were issued from a concerted approach involving a wide variety of actors of the society. Some efforts are currently being made in that direction towards the definition of sustainable development indicators in the large sense. The French Economic, Social and Environmental Council plays an active role in this process⁴⁴. We could imagine a similar course for the theme of quality of life, although it would be even more complex and long-lasting.

The (intended) weak point of the Report concerns current environmental accounting. Chapters 3 focused on the development sustainability issue and brought on that subject some essential clarifications. In contrast, neither these chapters nor chapters 1 (on classical GDP issues) have gone thoroughly into the current environmental accounting problems. They did not propose a choice between the diverging solutions they briefly mentioned. They did not suggest any new step.

In this field, a major project started most recently on the basis of contributions from environment analysts and political or associative leaders on one side, and a few national accountants on the other. It concerned the definition and measurement of unpaid ecological costs (potential costs of the degradation of natural assets). The open prospect is to lead to an estimate of resident/national final demand at total costs (i.e. paid economic costs as recorded by national accounts *plus* unpaid ecological costs). From my point of view, this estimate is crucial for environmental policy and development policy, but at the same time extremely complex⁴⁵. This route calls also for cooperative efforts of great magnitude.

⁴⁴ A National conference on sustainable development indicators was jointly organized on 20 January 2010 by the “Ministry of ecology, energy, sustainable development and the sea”, the CESR and the CNIS, and was prepared by a Committee for concertation with civil society.

⁴⁵ In some cases, it is possible to make significant progress in this direction by carrying out measurement in physical terms. This is the case in particular of the measurement of carbon footprint (CO₂ or more generally greenhouse gas) for each component of final demand by product. From there, we can try to measure in monetary value the associated ecological costs.

These are the major axes of development for basic statistical investigations, national accounts syntheses, observation and measurement of quality of life and estimation of ecological costs (incurred by Nature and not paid by the Economy) so as to record the final demand at total costs, which are very much needed in the near future. As far as the Commission's recommendations are concerned, I hope that they will actually play the leading role that the quality of its work deserves.

I would like to formulate another wish at the end of this paper: may the community of economists keep a little better informed of the evolution of national accounting than it is generally the case and, in order to make this easier, may national accounting find or find again a reasonable place in academic economic education beyond the reduced portion to which it has unfortunately been limited.

REFERENCES

Many references can be found at the end of each chapter in Part II of the Commission's Report. Annotated bibliographies can also be found at the end of all chapters in "A History of National Accounting". A few references have been given in the present text at their relevant place.