



The Future of the SNA in a Broad Information System Perspective

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I consider three questions in relation with the general issue raised by the title of this Conference.

Firstly, so much is often expected from the SNA that a crucial clarification is needed as to the possible ambitions which can be assigned in the future to the System in terms of extension of its coverage. More precisely, my query is addressed to the integrated SNA Central Framework. This qualification is needed in order to know what we are speaking about.

Secondly, I ask some questions about the Central Framework revision strategy.

Thirdly, taking stock of my previous conclusions, I specify briefly the position of what I propose to call the SNEA or the SNAE in a broad information system perspective that distinguishes four large spheres, the Economy, Nature, People and Society.

PART 1. BASIC AND PRIORITY ISSUES ABOUT THE RELATIONSHIP BETWEEN THE SNA CENTRAL FRAMEWORK ECONOMIC ACCOUNTING AND AN INCLUSIVE WEALTH ACCOUNTING SYSTEM, MORE SPECIFICALLY AN HYPOTHETICAL FULL SCALE ECOSYSTEM ACCOUNTING.

At the start of this paper, I deal with issues concerning the SNA integrated central framework. The expression “the integrated central framework” is perhaps not familiar to many people, though it has been introduced in the 1993 SNA (see ch.II, section E. The integrated central framework and flexibility ; ch.XIX, Application of the integrated framework to various circumstances and needs ; XXI, Satellite analysis and accounts, section A. Introduction). Chapter II also uses the expression “integrated economic accounts” for a synthetic presentation of the sequence of accounts. Some people use to call the central framework “core accounts” with more or less the same meaning. The terminology “central framework” or “integrated central framework” is more explicit and, in my view, should be more emphasized in the future. The concept itself probably needs to be more elaborated.

In short, the central framework is notably characterized by the requirements for integration and consistency from both conceptual (concepts, units and groups of units, definitions, classifications, accounting structure) and valuation viewpoints. In particular, the flows and stocks that it records are observed or estimated in terms of transaction values or near-by equivalents (the expression “market values” being traditionally used as a short cut). The meaning of the System’s aggregates is widely determined by the characteristics of the integrated central framework. For this reason “to be or not to be in the SNA central framework” is often considered essential in order to see the importance of certain issues, like environmental concerns, duly recognized.

Thus a fundamental question, when reflecting on the future of the SNA, is to ask oneself **how could evolve the coverage of the integrated central framework.**

In this respect the clarification that is strongly needed is about the relationship between the present SNA concept of economic wealth and the conceptual model of extended / inclusive / total wealth which economists have elaborated during the last half-century, generally in close connection with the analysis of sustainability in the context of an extensive reference to the Hicksean concept of income. In terms of capital, the term generally used by economists, extended wealth covers Built or Economic capital (terminology may differ), Human capital, Social capital and Natural capital. All sources of human welfare / well-being should be included in the extended / inclusive wealth concept. Values of all kind of assets are estimated by the present value of the flows of services which they generate. Welfare / well-being is sustainable if, assuming the various types of wealth are substitutable, the

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change of total wealth per head is not negative (limits to substitutability, resulting for instance from the existence of critical natural assets, complicate the picture).

In such an approach, one is tempted to justify, as did Martin L. Weitzman (1976), an interpretation of net national product or income in terms of both welfare and sustainability and to derive from it directions to be followed by national accounting.

Of course the idea that the wealth of nations is broader than the single economic wealth is not, as a matter of principle, debatable, even if there is room for discussion, for instance on the potential extension of the concept of wealth (what is the borderline ?) or the terminology (is the term "capital" relevant in all cases, when in a number of instances a more neutral term as "wealth" or, in French for example, "patrimoine", could be preferable ?).

What is in question actually, is the feasibility and, consequently, the acceptability of directly integrating the extended / inclusive wealth approach in the accounting structure denominated "the SNA central framework". This issue is on its part highly debatable indeed. However giving a sound, hopefully widely agreed upon, answer to this question seems to be a prerequisite of any reflection on the future of the SNA in a long term perspective. In the present days the situation is far from clear. Most probably exaggerated expectations of national accounting have been developed in various circles. As this has negative consequences, clarification is needed.

There seems to be two ways of formulating the big challenge facing the SNA central framework in this respect, a strong one and a less demanding one. Let's take them in turn.

The strong requirement case

It can be formulated like this :

" Should / could the current SNA central framework estimates aim at delivering meaningful aggregates of sustainable welfare / well-being / quality of life (sustainable net product or income) ?"

As far as I know, the most elaborated and influential answer to this question was provided by the Stiglitz, Sen, Fitoussi Commission's Report (2009) on the Measurement of Economic Performance and Social Progress.

The Report concluded that :

1 - current well-being / quality of life (the report avoided to use the term welfare usual in standard economic theory) is multi-dimensional ; it is not possible to integrate all of these dimensions in any adjusted national accounts aggregate in monetary value ; focusing on sets of well-being indicators is unavoidable

2 - an essential distinction has to be made between means (they include resources in goods and services and various aspects of people's life circumstances, like health, social networks, quality of institutions, etc..) and well-being which is the result of the transformation of the whole means. An implication of this crucial distinction is that GDP or National income or Final consumption belong to the field of means, not of results in terms of the measurement of well-being.

3 - sustainability assessment requires projections based on long term very ambitious modeling implying strong assumptions ; the task "goes much beyond the normal job of statisticians and/or economists ; entails prior responses to normative questions" ; and thus "strongly differs from standard statistical activities " (p. 264).

Thus the conclusion of the Stiglitz, Sen, Fitoussi Commission as to what I called above "the strong requirement case" in terms of both the measurement of current well-being and sustainability was unambiguously : " no ".

In the context of the present collective reflection on the future of the SNA, is there any reason for revising this conclusion ? I don't think so.

Let's look now to the less demanding case.

The weak empirical requirement case

It can be formulated like this :

“ Should / could the current SNA central framework be extended in order to fully integrate both current economic accounting and a possible current environmental (or more precisely current Nature's) accounting to come ? “

The term “ current “ here means, in line with the above investigation of the strong requirement case, “ without aiming at measuring neither comprehensive aggregates of well-being in monetary terms nor sustainable aggregates “ .

It is wise to limit the issue at stake to Nature's accounting, more precisely to accounting for ecosystem assets and the ecosystem services that they provide. In effect, most natural resources are already accounted for, as market resources, in current economic accounting. The treatment, still unsatisfactory in the SNA 2008, of the depletion of extracted natural resources will most probably be changed in some years time. The first volume of the SEEA 2012 includes a solution consisting in subtracting from net value added a depletion adjustment in order to get a “ net value added adjusted for depletion “ , thus resulting in a lower value of net domestic product. The open issue for the future SNA central framework is to choose between this SEEA 2012 solution and a more radical one that would treat the depletion amount as corresponding to the disposal (sale) of a slice of an asset, thus resulting in a lower value of GDP.

Fully integrating, in the SNA central framework, ecosystem assets and ecosystem services is a much more complex issue because, in their case, there exist very few, if any, flows or stocks in transaction values or transaction equivalent values.

In spite of some decades of international discussions concerning environmental accounting, one can say that the question formulated above has been poorly investigated.

The SEEA 1993 dealt mostly with the depletion of natural resources and the degradation of natural assets due to economic activities. Its purpose was the definition and estimation of a net domestic product adjusted for the environment. The degradation was to be valued following the maintenance costs approach. Thus the focus was on nature's assets. However the implications of extending in this way the costs of economic production were not fully scrutinized in the SEEA. The main criticism that emerged from the debates was that such an *ex post* static accounting adjustment was not relevant and that modeling another economic equilibrium was necessary in order to take this change into consideration.

As to the services provided by the natural environment, the SEEA 1993 concluded that taking them into account later on would need an extension of the concept of production of the economy.

The SEEA 2003, though reviewing in depth many methodological issues concerning natural assets and their changes and various possible subsequent adjustments to national accounts aggregates, followed the 1993 version's orientation. In particular it did not pay any attention to possibly accounting for ecosystem services as such ; it looked at them only among valuation techniques for measuring degradation (chapter 9, Section C Damage- and benefit-based pricing techniques).

In contrast with the two preceding versions, the SEEA 2012 dedicated its second volume to a proposal of “ experimental ecosystem accounting “ . What is proposed there is very ambitious. It covers accounts for ecosystem services in physical terms, accounts for ecosystem assets in physical terms, accounts for ecosystem services in monetary terms and accounts for ecosystem assets in monetary terms.

However rather little attention is paid in this volume to the possible integration (let's say “ full “ integration to stress the meaning of this hypothesis) between the present economic accounting and the suggested ecosystem accounting. The SEEA 2012 is obviously hesitating. For this reason, it does not include any recommendation in this respect.

A short section (6.4) is devoted to discussing the topic “ Integration of ecosystem accounts and economic accounts in monetary terms “ with an Annex A6.1 on “ Possible models for a sequence of accounts for ecosystem accounting “ . Among the issues discussed there, one can find the idea that the concept of production should be expanded to incorporate the generation and use of ecosystem services. It is also suggested that the ecosystem degradation could be recorded similarly to what is proposed in the first volume for depletion, that is, as an additional adjustment to the “Depletion adjusted net domestic product “ in order to get a “ Degradation adjusted net domestic product “ (see para A.6.4)².

In the same annex A6.1, it is stated that “ In aggregate the output of the economy rises by the full extent of ecosystem services, and GDP will rise to the extent that some of the ecosystem services are consumed as final consumption “. Such a sentence may look commonsense. What is behind the curtain however ? Para A.6.3 explains : “ Many ecosystem services will be indirectly included in measures of final consumption when they are used by enterprises in the production of standard SNA outputs (e.g. food, clothing, recreation) “.

This last sentence echoes what is often written by economists trying to estimate extensively the value of ecosystem services, in some cases at the world level (see for instance Costanza et alii, 1997 and 2014)³, generally by types of services and kind of ecosystem assets. All these scholars stress the point that one part (which they do not specify) of the services that they estimated is already “included in GDP “ as it is “ embedded in the contribution of natural capital to marketed goods and services “ (Costanza et alii, 2014, p.157).

However, if the existence of this kind of contributions is absolutely true, generally speaking, in physical terms, one cannot conclude from that evidence that those contributions are “ included in GDP “ which is an aggregate of transaction (or transaction equivalent) values.

In the same line of reasoning, one can frequently meet the idea that it would be necessary to “disentangle “ from transaction values the respective contributions of nature and of the economy (labour and produced capital). Surprisingly, this issue was apparently not studied thoroughly. One possible interpretation would be that it is necessary to distribute the present national account transaction values among their present components, duly reduced, *plus* one for Nature’s contribution (supposedly known). But this would suppose that the present prices of the different products represent their “ true “ absolute values, which would mean that their to-day relative prices are their “ true “ relative prices, when the present price system attributes no value to the contributions of Nature. A more satisfactory approach would add to the present price of each product the value (supposedly known) of the ecosystem services attributable to the process of production of this product in order to get its “ true “ relative value. Such an approach however is not convenient for a system of “ ex post “ static accounting adjustments, as it would be unrealistic to suppose the system of quantities unchanged (the same kind of objection was met by the SEEA 1993 in its time). This leads to the conclusion that the full integration (merging) of ecosystem assets and their services in national economic accounts is not conceivable outside large-scale modeling operations. Of course, the possible internalization of actually tariffied ecosystem services is a totally different issue.

There is anyway a stronger, radical objection to the feasibility of completely merging a possible ecosystem assets and services accounting system with the system of economic accounts. It concerns the valuation issue.

As the valuation principle of the SNA central framework is in terms of transaction values, for flows and stocks supposedly estimated “ in monetary terms “ to be integrated in the SNA central framework, it is necessary that their valuation could be interpreted as carried out in “ equivalent transaction values “. The problem is that the methods used for estimating the value of ecosystem services generate values which generally cannot be interpreted as “ equivalent transaction values “. What they provide are in

² Note that in the SEEA 1993 a similar adjustment, estimated following the imputed maintenance cost approach, was not conditional on extending the concept of production to the generation of ecosystem services.

³ Costanza et alii, The value of the world’s ecosystem services and natural capital, NATURE, Vol 387, 15 May 1997 ; Changes in the global value of ecosystem services, Global Environmental Change 26 (2014)

most cases estimates of the willingness-to-pay, including consumer surplus, derived from contingent valuation methods. Expressed in a traditional terminology, they are estimates of use-values, not of exchange values.⁴

This issue is generally perceived, explicitly or implicitly (see the Costanza and alii papers or the various versions of the SEEA). The trouble is however that no general and clear conclusion is drawn from this established fact. Such a situation could be acceptable, on a provisional basis, if there were a sound prospect of developing estimation methods that would provide on a wide basis equivalent transaction value estimates. However such an objective seems most probably out of reach, even if it can be realistic in some cases. The reason for that does not seem of the type “ we need time, we need more work, we need to elaborate improved methodologies, we need stronger support by society at large “.

There seems to be a much more fundamental issue at stake. Two main characteristics of the problem should be stressed. The first one is its magnitude. The global [use]value of ecosystem services was estimated by Costanza et alii at 33 trillions in 1995 dollars, for year 1997, that is to say 1.8 times the global value of GNP at that time. According to another study which they quote in their 2014 article, this global [use] value was estimated for year 2000 at 4.5 times the value of the world gross product. Of course this magnitude is not a problem as such. However it implies that the valuation principle required if one likes to fully integrate ecosystem accounts with economic accounts should be applied in huge domains of ecological functions and services that are more and more distant from zones of contact with actual economic transactions.

Anyway, if one likes to think seriously about the future of the SNA central framework, it seems rather urgent to clarify what could be or perhaps what could not be the expectations concerning a possible complete integration between (natural) ecosystem accounting and economic accounting.

In this respect, it is interesting to notice the fact that the title of the SEEA 2012 is “ System of Environmental - Economic Accounting “, whereas both the 1993 and the 2003 versions were titled “ Integrated Environmental and Economic Accounting “. Is it purely by chance or does it reflect the existence of serious doubts about the feasibility of the previous objectives ?

Clarifying this issue is essential, not only for national accountants, statisticians and economists, but also for the scientific community at large, and more widely various groups of the whole society.

If the answer to the question concerning what is called above “ the weak empirical requirement case “ is “ no “, then it means that the integrated SNA central framework can cover only the accounts of the Economy in the present SNA sense.

If there were an agreement on that, it would be advisable to **adjust our terminology** accordingly, in order to limit the risks of misunderstanding in the relations with the social community at large. The most suitable solution would be to slightly modify the title of the SNA. Instead of “ System of National Accounts “, it would become “ **System of National Economic Accounts, SNEA** “. Note that the expression “ Economic Accounts “ was sometimes (rather widely perhaps) used in the past, particularly during the fifties and the sixties. The first version (1970) of the ESA was called “ European System of Integrated Economic Accounts - ESA “. The title of the well-known book by Richard and Nancy Ruggles (1970) was “ The Design of Economic Accounts “.

However, **does such a limitation of the SNEA coverage**, as compared to the widely disseminated, at least implicit, much more ambitious objectives, **mean that nothing new about the relationship between the Economy and Nature could / would appear in the SNEA central framework ? Not at all, but the focus would precisely be on certain very important relations, not on the whole bulk of ecosystem assets and services whose full integration in the SNEA central framework is an objective out of reach.**

The treatment of the depletion of natural resources being supposed to be solvable in the near future, the proposal which I developed in recent years gives **prominence to the recording of the degradation of ecosystem assets due to economic activities**⁵.

⁴ By the way, it appears that expressions like “ measures in monetary units “ or “ in monetary terms “ often used in this context are not equivalent to “ measures in monetary value “. A given unit of monetary value is a general equivalent of exchange values, not of use-value.

⁵ Similar prominence of degradation was given by the 1993 SEEA, with similar valuation recommendations, but the accounting treatment followed was totally different. This issue is no longer central in the SEEA 2012.

There are two basic justifications for that.

The first, fundamental one is that the degradation of nature is the crucial phenomenon reducing the availability of ecosystem services and threatening the future of humankind. Beyond the debate on the exhaustion of natural resources, it is the degradation of natural assets which gave rise to the emergence and extension of the environmental concerns

The second reason, from an operational point of view, is that it is easier, though not at all simple, to try to estimate the value in equivalent transaction values (a condition for possible inclusion in the central framework) of the part of the ecosystem assets which is degraded during a given period of time instead of the whole bulk of these assets. Proximity with actual or potential degradation is generally a useful basis for physical measurement and for valuation.

I summarize my proposal below⁶.

Some additional concepts are introduced :

- The “ Unpaid ecological costs” represent the value, in terms of avoidance or restoration costs, of the degradation of ecosystem assets in a given period due to economic activities (cf. the SEEA 1993 concept of “ imputed maintenance costs “)
- The “ Ecological Debt “ is the debt of the Economy towards Nature. Its stock results from the accumulation upon time of unpaid ecological costs. If, in one way or another, the Economy restores degraded ecosystem assets, the stock of ecological debt is reduced. Revaluation can also be needed.
- The “ Final demand at total costs “ is the sum of the Final demand at paid economic costs (that is, the traditional SNA final demand) and the Unpaid ecological costs.

A specific extension of the accounting structure of the SNA central framework is worked out :

- As a reminder : according to the previous conclusions of the present paper, the SNA central framework is supposed, to-morrow as to-day, to cover only the accounts of the Economy
- As a consequence, Nature is treated as an entity distinct from the Economy, located outside the Economy, contrary to the usually proposed representations which treat it as a part of the Economy, either as an additional sector or sub-sector or as additional types of economic assets.
- An additional flow is introduced between Nature and the Economy. It consist of the value of the Unpaid ecological costs, corresponding to the degradation of ecosystem assets (see above).

The accounts operate like this:

- The final demand of the Economy is recorded at total costs, showing its two components, that is, final demand at paid economic costs and unpaid ecological costs.
- As the accounts of the Economy are, in other respects, unchanged (notably the income remains the same as in to-day accounts), an amount of negative saving equal to the amount of unpaid ecological costs is generated.
- This element of negative saving is counterbalanced by the additional flow from Nature to the Economy referred to above which corresponds to the value of the degradation of ecosystem assets. This flow is called in my previous papers “ capital transfer from Nature to the Economy”. This wording is not optimal, as this flow corresponds to a change in the ecological debt of the Economy, but it is easily understandable in a SNA context
- In the balance sheet of the Economy, the stock of ecological debt is recorded similarly to a liability, thus reducing the net worth of the Economy. It should not be merged however with financial liabilities, because of its specific meaning.

⁶ See “Towards the Estimation of Final Demand at Total costs (paid economic costs **plus** unpaid ecological costs”) in an Extended National Accounting Central Framework” (IARIW General Conference, August 2012). A more concise presentation, in French, can be found in « Vers un enrichissement des comptes de la Nation par la valorisation de l'évolution de l'état des actifs naturels (Coûts écologiques non payés, dette écologique, demande finale aux coûts totaux) » [Etudes et documents, n° 116, Octobre 2014, Commissariat général au développement durable, p.6-9]. Also in my presentation (in French too) at the 15 ème Colloque de l'Association de comptabilité nationale (Paris, 19-21 novembre 2014) : <http://www.insee.fr/fr/insee-statistique-publique/default.asp?page=connaître/colloques/acn/acn.htm>

Simplified numerical exemple for a closed economy⁷:

Assumptions : Gross National Income (GNI) 1000 (equal to GDP), Final Consumption 900, GFCF 100, additional degradation (Unpaid Ecological Costs) 50 imputed to FC 45 and GFCF 5

Accounts of the Economy

GNI	1000	
FC at paid economic costs	900	
<u>Unpaid ecological costs on FC</u>	<u>45</u>	[FC at total costs <u>945</u>]
GFCF at paid economic costs	100	
<u>Unpaid ecological costs on GFCF</u>	<u>5</u>	[GFCF at total costs <u>105</u>]
<u>Negative saving of the Economy</u>	<u>-50</u>	
<u>Capital transfer from Nature to the Economy</u>	<u>50</u>	
<u>(= change in the Ecological Debt of the Economy)</u>		

A very partial representation of the accounts of Nature is provided :

Accounts of Nature
(change in Nature's assets)

<u>Degradation of natural assets</u>	<u>- 50</u>
<u>Capital transfer to the Economy</u>	<u>50</u>
<u>(= change in the ecological debt of the Economy)</u>	

In order to avoid possible misunderstanding, a cautionary comment is necessary. In the proposed treatment, the term " costs " is intensively used, particularly in the expression " Final demand at total costs ". Additionally the recommendation for the valuation of the " Unpaid ecological costs " is the same as for the imputed maintenance costs of the main version of the SEEA 1993. However, in contrast with the SEEA 1993, the ecological costs here are not treated as additional costs of production. The so-called " capital transfer " in question is not a capital transfer " in kind ". It is a capital transfer in value corresponding to a concept of responsibility towards Nature. From that is derived the concept of " ecological debt ".

The measurement of unpaid ecological costs which is proposed would not provide an indicator of sustainability as such. However the global and specific, that is, for instance by types of products, ratios between total costs and paid economic costs for a given economy or the world economy at large would be a good indicator of the state of the relations between the Economy and Nature. The evolution upon time of the unpaid ecological costs and the ecological debt would deliver crucial messages to the various parts of Society.

The orientation proposed here, though much less ambitious than the complete combination of full scale economic accounting and ecosystem accounting, is not an easy one. The actual estimate of unpaid ecological costs imply the extended collection of information and the collaboration of many experts in different fields, natural scientists, economists, statisticians, national accountants, etc..It would necessitates wide national and international coordinated efforts. Most probably an international programme like the ICP is necessary aiming at a quinquennial periodicity, certain countries possibly adopting a more frequent one (every year in the long run ?).

Such a programme supposes a better understanding of what is both significant and feasible, institutional long term initiatives, political support and continuity. This inevitably means trade-offs between various possible objectives. From this point of view, I should say that the present situation is not satisfactory. In the last two decades, in environmental accounting, I perceived a lack of continuity, the dispersion of efforts, the tendency to go ahead in new directions instead of consolidating progressively what looked promising,

⁷ A little more complex hypothetical numerical presentations can be found in the references given in note 6.

for instance in the fascinating, too much embracing of course, SEEA 1993. Drawing lessons from actual experiences deeply scrutinized seems to have been generally missing⁸. Of course this is partly due to changes in the concerns of Society, including environmental concerns. However, as compared to the expectations about environmental accounting at the beginning of the nineties, the actual achievements are rather disappointing⁹.

There are obviously uneasy problems of governance of the statistical system as a whole that are to be addressed both at the national, international and world level.

PART II. ADAPTING THE SNA / SNEA (OR SNAE ?) TO THE CHANGES IN THE ECONOMY AND CENTRAL FRAMEWORK REVISION POLICY

Taking stock of the conclusions proposed in part I above, I consider now some general issues linked to the adaptation of the SNA, better called the SNEA, to the changes occurring upon time in the economic life. We must keep in mind that, when speaking about the System of National Economic Accounts, we intend to deal with the accounts of the Economy (Economy being taken in the traditional common and SNA sense), not with the economic accounts of Everything. The expression SNEA should not be a source of confusion in this respect, especially with those economists who follow the second approach. If it were, then it would be preferable to use the terminology "System of National Accounts of the Economy (SNAE)" instead.

Undoubtedly, establishing the accounts of an economy became more and more complex upon time, as compared to what it was sixty years ago or so. Of course the statistical data system developed enormously since that time and, roughly speaking, kept pace with the economic evolution until, let say, the end of the eighties. In parallel, the conceptual system of national accounting extended to a complete coverage of economic flows and stocks. In a way the SNA 1993 represented the quasi final achievement of what had been dreamt about half a century before. However **building the accounts had to face bigger and bigger challenges**. In addition, the knowledge of national accounting in the Society seems poor as compared to what it was in the seventies / eighties decades.

It is not the purpose of this paper to review these challenges. For an outline, one can see "Part 2 - The present : big challenges ahead" of the paper that I published in Eureka 1/2014 "National Accounting at the beginning of the 21st century : Wherefrom ? Whereto ?" (part 1 is devoted to "History : great achievements"). For a more detailed review, see Peter van de Ven (OECD) : "The Implementation of the 2008 SNA and the **Main Challenges for the Future Development of National Accounts**" (Paper prepared for the IARIW 33rd General Conference, Rotterdam, the Netherlands, August 24-30, 2014).¹⁰

Schematically, the economic evolution in the last three decades resulted in increased difficulties for observing and measuring adequately many aspects of "real life". Let's mention some striking features : globalisation and the role of multinational enterprises, extension of service activities in general and financial instruments and services in particular, development of intangible assets through R and D and other innovation processes, changes in various so-called business models due to new

⁸ In this respect, one should note the regrettable lack of a careful scrutiny, in a publicly available report, of the implementation attempts that followed the adoption of the SEEA 1993.

⁹ To be clear, I do not underestimate what has been achieved as regards for example the environmental protection expenditures and other fields of the environmental information system. My regret is directed to the core issue of hypothetical environmental accounting in the SNA integrated central framework itself, which is one of the most important issue when thinking to the future of the SNA.

¹⁰ This paper firstly addressed the main issues related to the implementation of the SNA 2008. Then, after « an intermezzo on the inclusion of illegal activities », Peter van de Ven discussed what he considers the main challenges with which national accountants are confronted in the future. He covers (i) the knowledge economy ; (ii) globalisation and international fragmentation of the production process ; (iii) the economic and financial crisis and related users demands ; and (iv) the ageing of societies

information and communication technologies, often in relation with apparently free deliveries of services etc.. In addition many of these factors are interacting.

Changes have been so big and, one can say, so sophisticated that sometimes the question was raised, especially as regards globalisation and multinational enterprises, if the possibility of calculating national accounts properly, on an actual country basis, was not vanishing. At least it became obvious that fulfilling this unavoidable task necessitated intense efforts for both collecting adequate information and developing relevant methodologies to treat it.

It is not either the purpose of this paper to review possible solutions to these difficulties. There is work-in-progress in this respect in various circles, particularly concerning globalisation in general and global production in particular.

I shall limit myself to **some more general remarks concerning the SNA revision policy**, mainly on the basis of the revision of the SNA 1993 that led to the present 2008 version.

What future for such a big revision in the near decades ?

Some people remember perhaps that during a short period of time **after the adoption of the SNA 1993, the intention** at the international level **was** twofold.

Firstly, not to wait such a long time (25 years between the 1968 version and the 1993 one) before making some important changes needed. The typical one at that time was to treat research and development expenditures as gross fixed capital formation instead of current expenditures¹¹.

Nevertheless the idea was to limit such significant changes to a very small number.

Secondly, some minor adaptations would be considered in order to take into accounts certain new features that were emerging, but not yet mature enough at the time of the preparation of the SNA 1993. The intention then was to introduce these few selected modifications in the SNA as soon as they would have been ready and accepted. If I remember correctly this was done actually for changing some paragraphs in the 1993 version in relation with financial derivatives. That was all.

Soon the intended procedure vanished and the community of national accountants embarked on a large, long lasting revision of the SNA 1993. About fifty issues were opened for discussion.

Of course this resulted in **a number of very useful decisions** concerning for instance R and D expenditures and assets, insurance transactions or pensions.

However, in my view, **two important regrettable decisions** were taken and introduced in the SNA 2008.

The first one was to include expenditures on **military weapons systems** in Gross fixed capital formation and the weapons themselves in fixed assets. In doing so the treatment as current expenditures followed by the SNA since the beginning of national accounting after the end of world war II was reversed. I will not remind here the terms of the debates. According to me, if something more elaborated was thought necessary for sake of the analysis of the military activities from an economic point of view, it were possible to propose a satellite account especially designed for that purpose with many more information in it. In effect the change introduced in the SNA Central Framework is very poor from this viewpoint, when it has two big inconveniences. One is an uninteresting change in the historical series (did somebody, except me, had a look toward the end of the 20th century to what Simon Kuznets wrote on the War period fifty years before ?). The other one is an important implication of the new treatment for the SNA (I raised in this respect the question: " Is war a process of economic production ?").

The second regrettable decision was to change the basis of recording **international trade flows** from crossing the border, used by traditional trade statistics and the traditional SNA including the 1993 version, to the change in ownership criterion traditionally used by the Balance of Payments Manual. The use of the crossing the border criterion by the SNA 1993 was accepted by the IMF statistical authorities, thanks to the explicit assumption of an imputed change of ownership when necessary.

¹¹ Regrettably this treatment was not finally adopted (it was scratched during the last phase of the revision process) in the SNA 1993. May I recall immodestly that I was, during the whole period of the preparation of the SNA 1993, strongly in favour of making the change at that time.

Again I will not remind the terms of the debate (in the first place, the importance of the analysis of trade in value added, as compared to gross flows recording, was stressed).

I just like to tell what conclusion I draw from the in-depth reflexions that took place, **after** the adoption of this change, in the Expert Group on the impact of globalisation on national accounts (2011) and in the task-force on global production (2014, 2015 to come). My understanding of these reflections is that the measurement and analysis of trade in value added (I do not enter into the details) requires the elaboration and development of a full study framework with a number of statistical complementary constructs. My impression is that the change in the basis of recording international trade flows in the SNA Central Framework was not necessary (in the strong meaning of “was not unavoidable “). The full study framework (partly satellite, mostly complementary to the SNA Central Framework) referred to above supposes a set or various sets of accounts, matrices and tables to be developed on the recording and analysis of the effects of globalisation. In this context, most probably, both approaches in terms of flows crossing physically the borders or flows changing ownership are useful and necessary.

As far as flows of goods crossing the borders are concerned, it is very important for external trade statistics and national accounts not to lose the contact with these flows that are directly observable, even if they tell us to - day a smaller part of the story than before. As far as goods for processing for instance are concerned, we should not forget that they follow a process of transformation during the time they are in the manufacturing activities of the processing countries with a number of consequences (they contribute to pollution emissions, etc..).

From these two conflictual cases, I draw three conclusions :

- (i) - one should be very cautious before changing certain SNA rules that are followed for a long time. **Continuity upon time** is very useful as soon as a conceptual statistical body is mature
- (ii) - when a change of great magnitude and / or significance is contemplated, it is necessary to **analyse** deeply this **change and its consequences** on the system as a whole **before a decision is taken**
- (iii) - before making a change in the central framework itself, one should carefully **examine** if introducing **an additional construct like a satellite account** or something similar **would be enough** to solve the issue at stake

The way the main challenges for the future development of national accounts are presented and discussed in section 5 of Peter van de Ven 2014 paper shows that people are conscious of the complexity of the new issues to be addressed. However we have **to be very prudent** regarding certain changes that have been suggested in international discussions so far.

For instance, I feel very reluctant to possibly eliminating from the SNA **the establishment unit** used in the input-output table as included for discussion on the research agenda in the SNA 2008 (para. A4.21). Actually I was not convinced by **the alleged “ change of emphasis from the physical view of input-output to an economic view “** (this para). I was surprised by the statements concerning input-output coefficients in para 14.42 of the SNA 2008 in relation with goods for processing (“ They no longer represent the technological structure of an industrial process but an economic one “) or more generally in para 14.43 (“ Interpreting input-output coefficients as representing the technological structure of an industry does not recognise the role of other factors...”)

It seems to me that what is necessary is **to include various approaches in an extended input-output framework** (product-by-product and industry-by industry matrices, technical and organisational viewpoints, regional aspects, etc..). I used here the expression “ organisational view “, which is admittedly not fully satisfactory, instead of “ economic view” that seems underrating other views¹². To the extent that regional accounts are possibly concerned (employment for instance) and for certain types of observation and analysis (like data on pollution emissions) the establishment unit remains necessary.

¹² The traditional formulation « technical coefficients » in input-output tables seems to have been sometimes misinterpreted. The purpose of such tables is of course not to provide instructions for “ do-it-yourself activities “. Actually the more relevant formulation “ technico-economic coefficients “ was often used in practice, when teaching national accounting for instance (this is certainly what I did myself in a remote past), because they are not based on a pure technology of production approach, but depend also from many “organisational arrangements “. To speak of “ a physical view “ concerning the input-output framework of the SNA is wrong. In addition technological changes are an important issue in economic analysis and consequently in economic accounting.

Anyway, in insisting upon this issue, **again my message is : “ be cautious, don’t throw the baby out with the bathwater “**. It is absolutely necessary to revisit the whole issue of the representation in economic accounting of “ the production system “, taking into account the new and complex features that occurred during the last decades. However it is not advisable to overemphasize the significance of certain changes simply because they would be more “ economic “ than others.

The crucial issue of the relationship in the SNA / SNEA Central Framework between observation and analysis

Another , crucial issue is raised in relation with the representation of the production system in national accounts. It concerns the **relationship in the SNA / SNEA between observation and analysis**, and behind this the fundamental question of **the relationship between the SNA / SNEA and economic theory**.

To specify the problem, it is relevant to ask the following question : “ Should the SNA / SNEA Central Framework include in its production account **the measurement of multifactor productivity ? “**

As is well known, analysts of productivity developed upon time a framework for productivity measurement and analysis (see for instance the KLEMS project). Notably, this led to the publication by the OECD at the beginning of the 21st century of two manuals (later on revised), one on the measurement of productivity, the other one on the measurement of capital. There were discussions around this topic during the preparation of the SNA 2008. It resulted in a kind of compromise. No change was made in this respect in the SNA production account. However an additional chapter was included in the 2008 Blue Book (Chapter 20 : Capital services and the national accounts), with a possible supplementary table on capital services (see section E of chapter 20).

There are different interpretations about the significance of chapter 20. Some people drew from it the conclusion that the measurement of capital services is included in the SNA, as it is in the Blue Book as a possible supplementary table. Other people (I share this view) consider that this treatment is not part of the SNA Central Framework production account.

A limited discussion on the issue at stake took place in the Review of Income and Wealth (December 2010) between myself and three colleagues from the U.S.(Jorgenson, Landefeld and Nordhaus).

My position is that multifactor productivity estimates (and growth accounting whose conceptual basis is similar) are analytical constructs depending on models and theoretical assumptions which are stronger than those that can be accepted and used in the SNA central framework. The latter must remain an observation system, even if some dose of what I called “ soft modeling “ is unavoidable.

Obviously this is a conflicting issue. My intention here is not to discuss it again. It is to stress the importance to try to give it an answer of principle in the rather near future, in order to avoid misunderstanding and contribute to **clarify the general issue of the relationship between what a NA central framework conceptual accounting system can cover and what depends of economic studies and the research methodological frameworks that are elaborated for this purpose**. For instance, when trying to explain the multifactor productivity surplus, analysts investigated the possible contribution of not yet covered components of wealth in an extended approach to capital. Special attention was paid at a time to the role of social capital. The role of natural capital (ecosystems) is often scrutinised in this respect.

I insisted here on the issue of productivity measurement because this topic gave rise to a lot of research in the neighbourhood of national accounts, with many national accounts data used by analysts.

However **the problem is a more general one**, it is a delicate intricate issue which raises difficulties for both national accountants and economists.

On the one hand, standard economic theory developed and uses a conceptual framework which includes inter alia welfare (utility) and its maximisation, an hicksean concept of income which, applied to long term analysis, leads to a definition of income like sustainable income /welfare and to the extension of capital to any source of welfare / well-being. This conceptual framework also includes a number of theoretical assumptions that are often at odds with “real life” circumstances. The more the time perspective of economic studies lengthens, the more the assumptions introduced get stronger, because of the necessity to simplify the picture when modeling.

On the other hand, the purpose of national accounting is to represent and measure the current economic situation and its evolution, covering both flows and stocks. As far as stocks are covered, their current valuation by economic agents is used whatever imperfect their expectations of the future may be.

There seems to be a rather general agreement now that national account aggregates can neither measure well-being nor sustainable income. The situation is less clear on certain other issues (see above for productivity measurement). I guess that it will become progressively generally admitted that the national economic accounts central framework cannot adopt solutions that rely on strong theoretical assumptions which do not correspond to the actual characteristics of economic life.

My conclusion, that can be disputed of course, is that **both approaches have their own rationale**. None of them should be supposedly obliged to adopt the viewpoint of the other. One implication of such a conclusion is for instance that many economic studies will most probably continue to use a theoretical framework that includes a concept of welfare (even if called "well-being"!) conceived of as if it were actually computable in current macroeconomic accounting, though it is not. However economists should hopefully recognize that such a concept cannot be included in the macroeconomic conceptual accounting framework designed for the SNA / SNEA.

More generally, it should be recognized that **the SNA / SNEA adopts a certain representation of the economy** that does not correspond entirely to either the general representations given by economic theory / theories or the particular representations provided by sectorial sets of accounting standards like business or government accounting standards. Differences may sometimes be based on conceptual reasons or on empirical considerations. Such a state of affairs can be felt uncomfortable. The important consideration is to make it totally explicit to users and analysts.

A well-known interesting case in this respect is provided by **the SNA concept of income** which does not cover **holding gains / losses**. The hicksean income concept tends to include them, though under certain conditions. Business accounting hesitated upon time between including them in the measurement of profit only when they are realized (in the context of historical cost recording) or as soon as they are potential (in the context of fair value recording). Financial account experts are increasingly interested in taking these gains or losses into consideration.

Covering realized holding gains in the SNA concept of income is both unfeasible in practice and incompatible with the general rule of recording assets and liabilities in the SNA balance-sheets. Covering potential holding gains is a different issue, much more disputable. Of course, it should be clear that the possible inclusion of these gains/losses in the SNA income concept is a relevant question only for real gains/losses (asset value changes beyond the change in the general level of prices). This remark reminds us that the SNA / SNEA must adopt in principle rules that are relevant for any type of situation to be faced, like high or low inflation rates.

Then, we should carefully investigate the reasons why the SNA historically adopted its present income concept. One reason is pragmatic. In the absence of balance sheets in the System and with very limited micro business accounts available, moreover following the historical cost rule of recording, there was simply no possibility at all to integrate holding gains/losses in the measurement of income. The second, more substantial reason behind the SNA concept is the pre-eminence given to the concept of production when estimates moved from measures of national income to properly speaking national accounts. The explicit distinction between produced and non produced values was later on introduced.

Nevertheless, the concern with holding gains in relation with economic behaviour is legitimate. In front of such a problem, what to do? Reversing the traditional treatment and so incorporating holding gains in the SNA / SNEA income concept would not be advisable in terms of Society's values (views can evidently differ in this respect), accounting structure (it would be necessary either to include holding gains as a resource in the production account and/or the primary income distribution account, or to reorganize substantially the sequence of accounts), discontinuity of medium and long term series and most probably international comparisons (apart from practical issues concerning the feasibility of these estimates by many countries, real holding gains in real estate property raise a serious problem of interpretation at the international level).

My suggestion would be to imagine **a new accounting tool called "semi - integrated variants"** (terminology to be checked). As regards the problem of holding gains and income, such a variant

could consist in defining a complementary alternative income concept in the SNA / SNEA, like **“income including holding gains/losses”** (again terminology to be checked, what is important at this stage is to stress the absolute necessity to attribute different names to different notions) computable with elements explicitly visible in principle in the System, but not incorporated in the integrated sequence of accounts. The accounting structure itself, with the important distinction between transactions and other flows, would not be modified. Such semi-integrated variants could be placed in a recommended satellite appendix after the sequence of accounts.

The importance of the structuration of the system of economic accounts

The above detour concerning the holding gains issue shows us once more the importance of the general question of the structuration of the system of economic accounts (that is, the system of accounts of the Economy as understood in part I of the present paper). In this perspective, the SNEA is made of the SNEA Central Framework on the one hand and Satellite accounts (Other SNEA Constructs, if so preferred) on the other hand. Whereas this distinction is generally known, broadly speaking (most national accountants have a certain idea of what satellite accounts are), it is not sure that it is as well understood that it should be. Anyway, when thinking about the future of the SNA, it is useful to look at it again. In effect the temptation of people arguing in favour of introducing a new treatment in the SNA seems generally to ask for such an inclusion actually, though not necessarily explicitly, in the central framework itself. In a number of cases, other possibilities were open that were not explored (I refer once more to the case of military activities).

As I said already, making the concept of central framework, including its name, fully explicit and well understood is crucial. This is closely connected with the importance of knowing and understanding the accounting structure, including the full sequence of accounts (current accounts, accumulation accounts, balance sheets) of the SNEA and its implications. Too often the use of expressions like “core accounts” has been a source of misunderstanding, some people taking a truncated traditional (that is, before the SNA 1993) sequence of accounts, ending with the financial account, as if it were the central system sequence of accounts itself

Unlike the SNEA Central Framework, the Satellite accounts (Other SNEA Constructs) do not constitute a closed system. Their relationships with the Central Framework can be of various types and they are also connected in various ways with other information bodies. Let’s take some examples, using the expression “satellite accounts” as an umbrella denomination.

Certain satellite accounts, like the one covering the **household own account production of services**, are in principle fully integrable in the Central Framework. If they are not actually integrated in current yearly and quarterly accounts, it is for practical reasons, not for conceptual considerations. Other satellite accounts, like the functional ones (education, health, social protection, housing, tourism, environmental protection expenditures, etc..), are fully compatible with the Central Framework in which their main components are included. Besides this, they are much more developed in connection with the specific information system to which they belong.

There exist more complicated cases, like concerning **human capital**. For the time being, the only connection between human capital estimates and the Central Framework is through education expenditures which are treated as current expenses. Reflections in the past about the possible integration of human capital explicitly in the Central Framework concluded that it would imply so drastic changes in the accounting structure that it was not a worth while perspective¹³. Whereas this conclusion was correct, the treatment of education expenditures as current expenses was and still is unsatisfactory. I turn to this issue below in Part 3.

When discussing briefly above the question of holding gains and income, I suggested the creation of a possible new accounting tool called “semi-integrated variants” in order to illustrate the great variety of possibilities (not everything is acceptable of course). Another example of a variant of this kind may be found in the public debt instruments valuation method where a different solution is followed in the ESA / SNA debt figures and the figures corresponding to the definition of the “Maastricht debt”.

It is not my purpose to further investigate here what are the flexibility possibilities in the field of broadly speaking “satellite accounting”. However it would be useful to undertake such a reflection in the near

¹³ At that time the concept of human capital was taken in its full extension, for instance by John Kendrick. Then, in most instances, it was limited to (intangible) capital due to education.

future. It would probably help to clarify issues like the relationship between the SNA / SNEA and economic research on the one hand and between the SNA / SNEA and administrative and public policy uses on the other hand. It would also permit to look more deeply to the relationship between the SNEA and other information systems.

The SNA Central Framework revision strategy

I now turn to **the SNA Central Framework revision strategy as such**. I use the term “strategy” intentionally. We need a clearer and, if I may say, revised revision strategy. Three aspects are interconnected in a revision strategy, the conceptual system revision policy, the revision implementation policy and what I call, improperly perhaps, the communication policy.

We have in front of us now a presentation of the 2008 SNA in the six hundred pages new version of the Blue Book. If we compare it with the 1952 SNA (not yet blue at the time), the present SNA is incomparably richer than the old one. It reflects half a century of a huge development of information and national accounting systems.

However we have to ask us the question : “who knows it (the book) ?” (of course, I do not mean “who knows every thing in the book?”, but “who is reasonably familiar with it ?”) and above all “who knows sufficiently the accounting system itself in order to avoid big interpretation mistakes ?”. I will not try to give here a real answer to these questions. Trying to answer them requires a specific investigation, which is in my view badly needed.

Nevertheless we had **a recent unpleasant experience with the media in Europe** when the revised accounts following the implementation of ESA 2010 (this operation also covered in Europe the estimate of illegal activities and prostitution which are already included in the SNA1993 / ESA 1995 conceptual system) were published. It has been an incredible experience. For instance, not only journalists, but many other commentators were fascinated by the prostitution and illegal activities inclusion in GDP, often confusing a level increase with an increase in the rate of change. On the other hand, there were no comments, positive or negative, on the inclusion of weapons systems in GFCF and economic assets (sometimes it was wrongly understood as if they were recorded in production for the first time). Only the R & D issue was generally roughly understood.

Concerning the media and beyond them, we noticed in France since a number of decades a disturbing terminological practice. In order to be, I suppose, not too much “technical”, and to diversify their vocabulary, many people, including journalists, politicians, etc progressively used to call GDP either our GDP, which was correct, or “our wealth” (in French “notre richesse”). I wonder if a similar practice developed elsewhere.

Not only the media, but also **the economic research community** seems to keep far from a reasonable level of knowledge in the field of national accounting. In this respect, let's have a look to the concluding remarks of the paper by Peter van de Ven I referred to earlier : “In the past decades, national accounts have become very successful, although a large part of the economic research community seems to have turned their back to the intricacies of defining and measuring macro-economic data.....increased use of national accounts data, including.....for so-called “administrative purposes”. User demands for high quality macro-economic data have grown accordingly.....a growing alignment of international standards...On the other hand, the success has also created expectations....National accounts also increasingly have become the object of criticism in media and academic research.....Sometimes these critiques are justified and call for further investigation. In other instances the comments and remarks simply show a certain ignorance [how elegantly this is formulated ! A.V.] of the standards and what they intend to measure, and call for enhanced communication from the national accounts community.” (para 108).

To be honest, though there are big problems in the teaching of economics and the training of journalists specialised in economic topics, **we must admit that we contributed to seriously complicate the picture**.

At the start of the nineties, we published the SNA 1993 which represented a big jump as compared to the SNA 1968 issued twenty-five years before. In 1993, a significant number of countries, especially out of North America and Western Europe, were still using the UN or OECD old post-war versions, whereas a number of countries were following the Material Product System.

Understanding and digesting the SNA 1993 (and the seven hundred pages of the corresponding Blue Book) was a difficult challenge for both national accounts compilers and users. New series of national accounts data were published in the following decade or so.

Fifteen years later, we published a new version, the SNA 2008, and the corresponding Blue Book, with some significant changes and a partial, not always apparent, wider rewriting. Soon, on this basis, new series of accounts were prepared through a big effort by national accounts compilers.

This was enough to give compilers and users a serious headache. I must confess that I feel myself still floating sometimes between the 1993 solutions and formulations and the 2008 ones. I probably would have needed something like the following : a Blue Book (on line or in print is a secondary issue), starting from the 1993 version and showing explicitly what had been deleted, reformulated and added in order to get the 2008 version. This would have supposed probably a not too much ambitious revision of the System and the Book so soon after the publication of the SNA 1993. This was the initial intention, but the practice was different.

There have been **two regrettable consequences**, directly or indirectly, of the at least “ de facto “ strategy followed in practice. One is that national account compilers had little time to devote to reflections on new problems, like accounting for Nature. The other one is that the research community was not involved in the discussion of certain important issues, like the treatment of military durables expenditures.

At the moment, my general conclusion is that the revision strategy **in the next period of time should be modest in terms of making changes in the system’s central framework**. This does not mean that nothing has to be done. What I have in mind is that **we need a period of stabilization**. I have no ready made firm proposals in this respect. What I can do is to offer **some suggestions** to be checked and possibly further elaborated. I will distinguish the three aspects, conceptual revision/elaboration, implementation, communication.

The first suggestion is **to disconnect in a certain way the conceptual elaboration process and the implementation strategy**.

The implementation strategy is a serious problem¹⁴. For various reasons, influent users, for instance the European Central Bank, urge statistical offices to change rather frequently their national accounts series in order to keep to date, as much as possible, with the economic and financial evolution, including the influence of the latter on the conceptual SNA framework. As a consequence the present statistical policy, in the European Union, is to revise completely the accounts every 10 years or so. This is, most probably, asking too much in a general context of tightening resources.

On the other side, changes in the structure and working of the economies push users and compilers to require adaptations, at the limit continuous adaptations of the System. This, in turn, leads to the requirement of introducing as soon as possible in national accounts compilation the changes, hopefully the progresses, to be made to the conceptual system.

We should **try to combine a kind of continuous research effort on carefully selected important issues, a less frequent inclusion of the results of these thinkings in a complete new version of the Blue Book and also a less frequent than it is now implementation program**.

In between two versions of the BB, agreed upon provisional conclusions would be put in “ **waiting boxes** “ like a kind of provisional “ **BB on line** “ .

Such a **latency period** would have a number of connected advantages.

Firstly it would give national accountants the **opportunity to consult interested people in various circles outside official statistical services or nearby agencies. Such a consultation procedure could be formalised**, taking possibly as a reference what is done in the process of elaboration of international business accounting standards. One of the objectives pursued, apart from getting useful substantial comments, would be to acquaint people progressively with changes to come later on in national accounts estimates, when to day they receive a lot of information at the same time concerning many new features of the accounts¹⁵.

¹⁴ As we know the problem is actually wider that the implementation of changes in the conceptual system. There is also the necessity to take into account the progress of statistical sources, including changes in classifications.

¹⁵ A much broader issue is the regrettable absence of any public extensive debate on certain crucial questions. Let’s take two examples in this respect. One is the inclusion of the acquisition of weapon

Secondly, it would give the national accountants community the **opportunity to check carefully what kind of adaptations of the System at large are really required.**

Let's take **an example**, especially important in the present times, that is, the **consequences for national accounts of globalisation and the representation of the activities of multinational enterprises**. Some years ago, when the problem emerged, one could have the impression that a big overthrow of the System was to be expected. Nowadays after the reflexions, still in progress, of the two Working Groups referred to above, I got the impression that **probably no significant change of the structure of the system would be needed** (not even changing the basis of recording international trade flows, as did the SNA 2008, was necessary, but this is my personal view of course). The problems we have to face are twofold. Firstly, it is a big practical issue, involving possibly political actions by Governments for getting the necessary information and then treating it (specialized teams in statistical offices can be needed, they already exist sometimes). Secondly, it is to provide a good representation of globalisation through a set of interrelated accounts and matrices. This probably will lead to **a complementary satellite framework**, fully compatible with the SNA / SNEA Central Framework on one hand and integrated in a research framework on the world economy on the other hand. In so far as the Central Framework is concerned, it is probably basically a question of **completing certain classifications and providing additional interpretations (see the next paragraph) in order to articulate the Central accounts with this satellite framework**. If my interpretation of the on-going reflections is correct, the implementation of this complementary satellite framework could be done independently of any general revision of the central accounts.

More generally, in a number of instances, **certain cases** can be dealt with **by modifying or completing the interpretation** of what is written in the last version of the BB, without necessarily modifying the book itself. In such cases, we should refrain from unduly rewriting this version. Subject to further reflections, we could **imagine an on line set of interpretations**, that would become official interpretations following a given procedure of confirmation. Again the purpose is to stabilize the System and the Manual.

I turn now to **the communication strategy issue itself**.

As already indicated above, we should **try to associate some other people**, for instance in the **economic research and education community and specialised medias, to the discussion of certain issues** as soon as they have been fully investigated by the national accountants and a set of solutions has been proposed.

A more reaching proposal is that we should perhaps reconsider completely the presentation of the SNA which is provided in the Blue Book. The 1993 Blue Book, with its 21 chapters, was close to become a monster. The 2008 Blue Book, with its 29 chapters, is definitely a monster.

systems in GFCF and economic assets. The discussion was confined to the circle of direct participants to the revision process (I was probably the only outsider giving his elaborated views) and possibly some participants in the IARIW conferences. However, there was no public debate, neither before the change is made nor when the new series are published, on an issue which was rather significant for the whole of Society. No open discussion was organised on this topic, for instance in the Review of Income and Wealth.

A second example is the complex issue of the relationship between observation and analysis. I published some comments on this theme in the December 2010 issue of the ROIW, with a Reply by a group of colleagues from the US. My expectation was that the publication of these two papers would initiate a debate in the Review. Unfortunately it was decided in advance that I would not be given the opportunity to react to the Reply. So there was finally no extended discussion. It is not my intention of course to discuss here the Review policy that I can understand in the context of competition between academic reviews. I only like to stress the absence of a vehicle for publicly discussing relevant national accounting issues which generally, by nature, do not give rise to papers of the required "academic level".

This is an important feature in the perspective of the future of the SNA, in relation with, though not only with, the economic research community.

Perhaps EURONA, the new Eurostat review on national accounts and macroeconomic indicators, could provide the opportunity to contribute to such open public debates.

The purpose of chapters 1 and 2 (Introduction and Overview) was to provide users a synthetic introduction to the System. Inserted in such big books, they were most probably not perceived to be more attractive than the book as a whole. We must admit that the BB's are for national accountants, and a handful of economists perhaps.

Of course changing the 1993 / 2008 Blue Books is out of the picture now. Reconsidering the way to present the SNA Manual is **a task for the future**, possibly some twenty years after the 2008 version.

So, what can we try to do in the near future ? It seems to me that **we should prepare, as a kind of antechamber to the Blue Book, a presentation of the existing SNA (however taking into account on-going discussions) directed to economists, other analysts, policy advisers and more generally people that are interested in the main national accounts results.** To be more concrete, the objective expressed in a simplified way would be to cover **the general issue : “ what any economist should know about the SNA ? “**, that is, what the SNA covers, what it does not, what it can try to cover, what it cannot, what is presently disputed, what are the relationship between the SNA and economic theory in terms of the measurement of well-being, the inclusive wealth approach, the sustainability perspective, between the SNA and business accounting standards, etc.. Then a summary presentation of the accounting system would be provided, with the distinction between the fully integrated central framework and the other accounting constructs, etc..

People familiar with the BBs will easily notice that what is proposed here looks basically like a combination of the contents of Chapter 1 : Introduction and 2 : Overview of the 1993 and 2008 BBs. The inspiration is similar indeed as to the topics covered. However, to be successful, the end product should look very different. It would be **a separate volume**, a little longer than the present text, but **of no more than one hundred pages**. Above all, **the drafting should be especially adapted to the public in view**, not directed to national accountants themselves, and **the volume should be conceived of as self sufficient**, even if in the future it could be the first of a series of volumes replacing the single volume of the present Blue Book. Though it is premature to propose now a precise design for the next BB, we should most probably have in mind a series of three or four volumes in the future. I do not pursue this idea here.

The topics discussed in Part 2 of the present paper can certainly raise rather delicate issues as regards the governance and management of the national accounting system, a conclusion very similar to what is written at the end of Part 1.

PART 3 . THE SNA IN A BROAD INFORMATION SYSTEM PERSPECTIVE

The conclusion proposed in Part 1 above is that the SNA integrated Central Framework cannot cover the whole content corresponding to the extended / inclusive wealth approach conceptual model and its ambition to measure the resulting well-being in a sustainability approach.

In order to make this clear for users and the research community, I stressed the desirability to even adapt our terminology. We should speak in terms of System of National Economic Accounts (SNEA) or better perhaps, to avoid any misunderstanding, in terms of System of National Accounts of the Economy (SNAE), instead of System of National Accounts (SNA) as to-day. I shall use SNAE in the following pages.

Taking this conclusion as a point of departure, it is useful to briefly specify the position of the SNAE in a broad information system perspective.

For this purpose, four large spheres and their related information systems are distinguished :

ECONOMY	PEOPLE
NATURE	SOCIETY

The SNAE is obviously in the sphere of the Economy.

Have a look first to the **relationship between Economy and Nature**.

First of all, it is necessary **to clarify the relationship between the System of Environmental-Economic Accounting Central Framework 2012 and the SNA / SNAE Central Framework**. There is a regrettable risk of confusion due to the use of the expression Central Framework in this first volume of the SEEA 2012. At least for me it is difficult to understand why such a formulation has been used (I hope someone tells me something more in this respect).

This **first volume of the SEEA 2012** actually fulfils three main functions.

The first one is to estimate the value to be attributed to the depletion of natural resources in order to derive additional aggregates by subtracting this depletion from usual net aggregates calculated after the consumption of fixed capital has been taken into account. This treatment is a possible candidate (not the only one, not the best perhaps) for inclusion in the SNAE Central Framework in the near future. As everybody knows this solution leaves the nominal value of GDP unchanged as compared to the present SNA.

The second function of this volume is to provide a detailed accounting framework, in both physical and monetary terms, for natural resources (most of them are market resources). As such it may be considered as **belonging to both the accounts of the Economy (as a developed satellite account) and the accounts of Nature**.

The third function corresponds to components which are already included in Satellite accounts, like environmental activities, environmental protection expenditures, etc.. A possibility to be considered in the future, depending on the choice made for the SNAE Central Framework, would be to introduce, as what I called above "a semi-integrated variant", an alternative treatment of the depletion of natural resources leading to its deduction from the nominal value of GDP itself, as a revenue accruing from the disposal of an asset (not as a revenue originating in production, like it is treated to-day).

Have a look now to the possible accounts for ecosystem assets and ecosystem services, as proposed for instance, on an experimental basis, in **the SEEA 2012 Experimental Ecosystem Accounting**. Following the discussion in Part 1, there is in my view no realistic perspective of a full integrated system covering, in value terms, both the accounts of the Economy and the accounts of ecosystem assets and services.

Possible accounts for ecosystem assets and services thus belong only to the accounts of Nature, not to the accounts of the Economy.

Physical accounts and monetary accounts should be considered separately.

In general terms, **developing accounts for ecosystem assets in physical terms is crucial**. It requires considerable progresses in the knowledge of Nature. Beyond quantitative data that are rather easy to observe and measure, the crucial variable is the state of health of the ecosystems (qualitative data concerning sets of characteristics). An investigation of reference is the Millenium Ecosystem Assessment.

Obviously, physical accounts for Nature cannot be a task fulfilled mainly by national accounts compilers. Joint efforts of many experts in the various fiels of Nature's observation and analysis, including the development of statistical data, are necessary.

The purpose is to observe and measure the total stocks of ecosystem assets and their variations due to various factors, with a special insistence on the degradation due to economic activities¹⁶. Observing both the total stocks and their changes in physical terms gives the possibility of partial sustainability assessments, as far as environmental norms (generally in terms of given ecosystem health characteristics) have been determined as Society standards. It allows trying to answer the question "are we driving in the right direction or not ?"

¹⁶ The valuation of this physical degradation in equivalent transaction value corresponds to what is called in Part 1 above "Unpaid ecological costs" .

Such an objective points in the direction of evolving **towards a kind of periodical Census of Nature**. Every five years would be a convenient periodicity in terms of both feasibility and possibility to interpolate significantly the results in the intercensal period.

A central question, when thinking to develop accounts or other types of macro indicators in physical terms for Nature, is **the issue of equivalences** between heterogeneous kinds of ecosystem assets.

Many, probably the majority of specialists of natural sciences seem to be reluctant towards the possibility of combining, by one way or another, such physical observations, with however significant differences between experts (the Norwegians for instance seem more open in this respect).

The carbon content appears to be an acceptable equivalent in a rather wide field. There is for the time being no such equivalent concerning biodiversity.

Using agreed upon social weights to combine sets of physical data is perhaps possible and has to be attempted.

An ambitious approach has been proposed in Jean - Louis Weber 2011 publication "An experimental framework for ecosystem capital accounting in Europe" (EEA Technical report No 13 / 2011). A physical measurement unit called "Ecosystem Potential Unit Equivalent" is proposed (the capital potential is the ability of the natural assets to continue to deliver their services).

As far as **asset accounts in monetary terms** are concerned, **the link between the accounts of the Economy and the accounts of Nature** which is **proposed in Part 1 above** is the recording of **the value of the degradation of ecosystem assets** (in equivalent transaction values) due to economic activities as part of a valuation of final demand at total costs and an equivalent capital transfer between Nature and the Economy. The accumulation upon time of the latter would provide an estimate of the ecological debt of the Economy towards Nature

In the Nature'accounts, symmetric flows and stocks are to be recorded.

One can note that similarly, in Weber's experimental framework, only that part of the ecosystem assets which is degraded is to be valued in monetary terms, following also the 1993 SEEA maintenance costs type of valuation.

Concerning **ecosystem services**, nothing is suggested to be recorded, for the time being, in the proposed SNAE Central Framework. This **issue is completely left to the accounts of Nature**¹⁷. A lot of research is going in this field, generally on specific types of services (like the pollination services) or on the services of specific types of assets (like coral reefs or mangroves). Such "*micro*" studies, generally located in specified geographical zones, are useful and necessary, in combination with avoidance and/or restoration costs estimates, to help making choices.

It is admitted that the valuation methodologies used do not generally provide estimates which can be interpreted as equivalent transaction values, because they include surpluses. Above all, their estimates at the macro level raise complex issues.

Their possible recording in the SNAE-CF cannot be considered, in the present state of affairs.

My view is that, *for national accounts purposes*, much higher priority should be given to the estimate and recording of the degradation of ecosystems as a whole though it is, admittedly, not an easy task either. Then, time passing, we will see what possibly emerges from the present undertakings concerning ecosystem services.

Let's turn now to the relationship between **Economy and People**.

People participate in the production activities of the Economy. However, traditionally in the SNA, **human capital** is not shown among assets, whereas a number of economists have prepared estimates of human capital, mostly in the context of productivity measurement and the analysis of the factors of growth. The possible inclusion of human capital in the SNA itself has been debated for a long time. As already said earlier in this paper, the full scale integration of human capital has always been ruled out in order to avoid overburdening the accounting system.

Nevertheless, the treatment of education expenditures as current consumption expenditures has generally been questioned and is still a source of discomfort. Now that research and development expenditures have been included in GFCF, giving rise to a new type of intangible assets, a similar solution could be contemplated for education expenditures (actually human capital estimates by economists are generally limited to measuring the stocks of education capital).

¹⁷ In this respect, the title of the SEEA, even without the qualification "integrated", would have to be reconsidered, in order to clarify what is the objective of the SEEA

As there are some complex issues involved (notably, for the stocks, the recurrent opposition between the accumulation of expenditures approach and the present value of expected future incomes), the question should be carefully investigated, for instance through an experimental satellite account. In order to avoid a too much impassioned debate, it would be wise to approach the question in the wide perspective of trying **to design a human resources account or rather a set of accounts, as part of the information system on People, with a number of links to the accounts of the Economy** . In so far as human capital is concerned, it could well happen, after such a deep reflection is completed, that more than a single solution is agreed upon, depending on the type of accounting construct which is considered : a minimal one in the (integrated) Central Framework (for example, the solution referred to in the previous paragraph, using the accumulation methodology) ; a variant in a satellite account of the SNAE (for instance, using the present value of expected future incomes methodology and comparing the two solutions) ; possibly more sophisticated approaches in economic research frameworks.

By the way, such a “ **set of solutions** “ **approach**, can be relevant in order to solve some other difficulties. The household production of services for own use can be a good case in point. There is a general agreement that the value of unpaid labour time spent in these activities is in principle eligible for inclusion in the SNA Central Framework GDP. It is conventionally excluded for practical reasons. There is also a general agreement that these activities should be measured (and included in a variant of GDP) in a satellite account, every five or ten years or so (this periodicity is unfortunately not respected in practice). There are two main options for this satellite account. The first one is to limit it to the estimate of the unpaid labour (possibly with several valuation hypothesis) and its inclusion in a variant of GDP. The second one is to build a complete account for the household production of services for own use, by reclassifying part of the present household final consumption into intermediate consumption or GFCF, calculating additional CFC, etc..in a framework distinguishing the various types of services in question. No explicit choice has been made between them, though in practice the first option has been much more often chosen. The rationale for the first option is the desirability of not overburdening a satellite account whose purpose should be to present regularly a variant that is close to the Central Framework itself. However, this SNAE satellite account should also presents the stock of household durable goods other than dwellings (dwellings are already included) as a variant in the balance sheet of the household sector. The second option is more in the nature of an economic research framework on the household activities in question. It is a more sophisticated type of satellite account.

People receive from the Economy primary and redistribution incomes. They acquire consumption and capital formation goods and services and also financial claims and liabilities. These flows and stocks are recorded in the Household accounts (current, accumulation and balance sheets) which are, at the same time, part of the Central Framework accounts of the Economy and part of the information system on People.

Following the recommendations made by the Stiglitz, Sen, Fitoussi Commission, and on the basis of some previous successful attempts, work is developing in order **to take the distributional dimension into consideration in disaggregating the Household accounts**, notably by combining micro and macro data.

In this respect, it is interesting to note by passing that more than once the importance of such distributions by type of households concerning income and wealth has been stressed either in specialized sets of recommendations or in the Social Accounting Matrices or in the 1993 version of the Blue Book (chapter XIX, section B).

The same Commission considerably clarified **the welfare measurement dispute**. It seems now generally, or quasi generally, agreed that the SNA / SNAE aggregates have not the purpose to measure welfare (the Commission preferably used the term well-being or quality of life) and cannot do it. Even, beyond the SNA aggregates themselves, the assessment of well-being / quality of life cannot lead to a single monetary aggregate. Trying to design a composite index requires social choices. Well-being is multidimensional by nature.

The Economy delivers goods and services which are means that people, in combination with other means, transform in well-being. Sometimes, these goods and services are called “material well-being” . It seems to me that such a terminology would be a source of confusion and should be avoided in national accounting.

Various satellite accounts on health, education, culture, social protection, unpaid household activities, etc.. belong to both the accounts of the Economy and the accounts of People (especially so when they include data on beneficiaries and distributions between people).

However the **framework for the assessment of well-being / quality of life** is not an accounting framework. It cannot deliver unequivocal results either. It involves possibly conflictual social choices reflecting various value systems. Trying to reach at least a provisional consensus would imply a procedural methodology in a relevant context. Initiatives like the OECD “ Better Life Index “ are contributions in the right direction¹⁸.

The fourth sphere distinguished above is **Society**.

The accounts of Government are part of the accounts of the Economy. They reflect the **Government activities/functions** which take place at the level of Society. **Collective consumption** is in principle the part of Government consumption expenditures that cannot be individualized between people. In some parts of Government activities, satellite accounts, covering also other institutional sectors activities, have been designed, concerning for instance environmental protection or research and development.

As said already in this paper, a satellite account would be particularly relevant for **defence / military activities**. It would be much more useful that the regrettable inclusion of weapons systems in GFCF and economic assets (obviously, I cannot digest the innovation introduced by the SNA 2008 in this respect !).

Similarly to what is suggested above for household durable goods, it would have been enough to show the stock of military durables as a variant in the balance sheet of the government sector leaving further analysis to a satellite account. In my view, military durables have to be seen as political assets, whose use is not involved in a process of economic production.

Beyond government and other public bodies, **non-profit organizations** are important institutions usually created by the Civil Society. The interest to attribute a value to the unpaid voluntary work is recognized. On the other hand, the participation of people (**civic engagement**) is one dimension in the assessment framework of well-being.

At the level of society, the wealth of a nation or of humankind as a whole includes **many intangible assets (cultural, political, moral, social value systems, etc..)**, which are difficult to integrate in a proper information system and to which it is a big challenge to try to attribute a value (whatever the type of value system that can be contemplated). Sometimes economists referred to such Society's characteristics when trying to explain, for instance, part of the differences between various countries rates of growth.

It is probably hardly possible to classify them under the umbrella expression of “ social capital “. The latter seems generally taken in the more limited sense of “social connections“ between people, through diverse types of association, and governance . As such they are taken into account as part of the framework for the assessment of well-being / quality of life.

In the approach presented above, certain social concerns are transversal. A good case in point is **environmental accounting**. It covers mainly the accounts of Nature and, according to my proposal, the link between the accounts of Nature and the accounts of the Economy through the value of the degradation of ecosystem assets due to economic activities. It also cover modules possibly included in other frameworks. For instance environmental protection expenditures are a satellite account in the accounts of the Economy, a module on environmental health damages can be part of (satellite) health accounts which belong to both the accounts of the Economy and the accounts of People. Inequalities as regards environmental amenities or nuisances have to be considered for the assessment of well-being / quality of life of various groups of the population.

¹⁸ See for instance the set of articles published in the march 2015 issue of the Review of Income and Wealth “ New Measures of Well-Being : Perspectives from Statistical Offices “ Edited by Peter van de Ven. The article by Martine Durand presents “ The OECD Better Life Initiative : How's Life? and the Measurement of Well-Being “ (Fig.1, p.5 shows The OECD Well-Being Conceptual Framework).

The last pages show that **national accounting is wider than accounting for the accounts of the Economy** (e.g. the accounts of Nature are part of national accounting, not part of the accounts of the Economy). Also **accounting for the Economy is wider than the SNA / SNAE Central Framework stricto sensu (because of the existence of many satellite accounts or other semi-integrated constructs)**.

Flexibility is the master word. Using **flexibility margins** provides possibilities to take various phenomena into account without complexifying unduly the SNEA Central Framework.

It should be recognised that such an orientation differs from the usual economic theory pressure towards integrating as much as possible every relevant concern in a single comprehensive framework in monetary value.

The best illustration of this difference of orientation is given by the concept of extended/inclusive wealth. All segments of the extended wealth notion are present in the information system approach advocated here (economic assets, natural assets, human capital, social capital). However, contrary to the extended wealth conceptual model, they are not supposed to be combined in a total wealth measured in monetary value, from which welfare / well-being is derived and sustainability is checked. Trying to implement this conceptual approach is left to research and analysis.

Managing such a flexible information system approach is not an easy task. It supposes a conceptual coordination capability which is perhaps weaker to-day than it was in the past when both national accounts and statistical systems were less developed in a simpler economic environment.