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The UN Convention on the Law of the Sea: An Inefficient Public Good Supplied by an Inefficient Organization*

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Abstract

The Convention on the Law of the Sea is the still controversial outcome of the longest and perhaps most expensive international conference of the century. The most debated issue at UNCLOS III was the Convention's régime to govern seabed mining; differences of opinion on this régime have seriously challenged the purpose of the Conference and are likely to keep the Convention from becoming effective as international law.

This paper is an inquiry into the economic causes for such an outcome. In Section II the efficieny of the Convention's regulation for minerals production from the ocean bed is analyzed. Section III deals with the efficiency of the Convention's production process at UNCLOS, focusing on the determinants of voting behaviour and on the rules of procedure used. The last section explores the rationale for alternative multilateral organizations for an efficient management of seabed mining.

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I. Introduction

After almost nine years of intensive negotiations among over a hundred countries, the United Nations Convention on the Law of the Sea was finally adopted by majority vote in April 1982. The 130 votes in favour of the Convention were subsequently endorsed by 117 signatures in December 1982. One year later, however, the Convention had been ratified by only nine countries, i. e., by 15 percent of the required number of countries. Today some countries that formerly adhered to the Convention seem to have had second thoughts and are in the process of joining the group of countries opposing it in their demands for a review conference. Moreover, the latter nations are currently considering the possibility of ocean use under a separate treaty, in case the Convention is not revised according to their interests. What is the explanation for such an outcome?

The most controversial issue at the Third United Nations Conference on the Law of the Sea (UNCLOS) was the régime to govern seabed mining. This topic had already been dealt with at the UN before, but was not placed on the agenda of the Second UNCLOS, probably due to the fact that at that time seabed mining was somewhat closer to the realm of science fiction than to reality. Although it was still fairly futuristic when the recovery of manganese nodules from the ocean bed began to be debated at UNCLOS III, it was apparently spotted by the Group of 77 (nowadays counting 119 member countries) as an ideal opportunity to introduce the principles of the so-called New International Economic Order (NIEO) into modern maritime law.

Thus, in order to understand the outcome of UNCLOS III, the longest and probably the most expensive international conference of the century, one should approach the Convention from two different angles and try to find answers to the following questions:

(a) What makes the Convention impossible to be accepted by all UN countries?

(b) What specific characteristics of UNCLOS III are responsible for the production of such an international public good?

This paper shall attempt to answer these questions from an economic point of view. In the next section the efficiency of the Convention's regime to govern ocean mining is analyzed. Section III discusses the Convention's production process at UNCLOS, focusing on two aspects, the composition of UNCLOS participants and the decisionmaking procedures adopted at UNCLOS. Finally, Section IV explores the rationale for an alternative legal-institutional régime to govern deep-sea mining along the lines suggested by countries opposing the Convention but lacking majority support at the UN.

II. The Convention: A Régime to Obstruct Seabed Mining

Whilst in the case of world fisheries the Convention on the Law of the Sea provides a national solution favouring coastal states, the recovery of polymetallic nodules which were declared to belong to the "common heritage of mankind" shall be controlled by an international bureaucratic body, the Seabed Authority [UN, b]. This Authority will have the power to allocate seabed mining licenses at discretion and to set production ceilings as well. Further, it is entitled to collect revenue from ocean mining and to use its financial resources for compensatory payments to developing land-based mineral producers, in case their export earnings should be adversely affected by minerals supply from the sea. In addition, the Seabed Authority will itself be active in seabed mining through the "Enterprise". The latter will have the advantage of receiving already prospected nodule fields and the relevant technology on extremely soft terms from firms signing contracts with the Seabed Authority.

Does such a régime offer the legal-institutional framework for an efficient seabed mining? The answer is no. There are several reasons for this. The recovery of manganese nodules lying on the ocean bed at a depth of approximately 5000 meters is expected to call for first-generation investments in the order of 1.5 billion US Dollars for each venture. Projects of such a magnitude usually have a life of 20 to 25 years. Thus firms engaging in minerals production from the deep sea ideally need a set of clearly defined, universal, exclusive and transferable property rights [Posner, 1977]. This means that they should embrace all the manganese nodules found on a delimited field

(universality), that rights over a given field should be assigned only to one firm or consortium (exclusivity), and finally that the firm holding these mineral rights is given the possibility of selling them to other interested parties (transferability).

The Convention's régime obviously does not meet such minimum conditions for an efficient seabed mining, because the Seabed Authority is stipulated to assign only a fraction of these rights to mining firms. Particularly, as has been noted above, the Authority could interfere with the firm's production policy by limiting its output. Also, contracts signed with the Seabed Authority are not transferable, a fact that substantially increases the economic risk to be borne by individual firms. Another feature that tends to obstruct the participation of international consortia in seabed mining by imposing prohibitive costs upon them is the duty to hand over prospected fields to the Authority and to virtually share R-and-D-intensive mining technology with competing firms. Thus as it stands, the Convention is very likely to prevent seabed mining from materializing mainly because it fails to offer the most basic incentives for such an activity.

On a world scale, a régime that can be reasonably expected to deter potentially interested firms could lead to a misallocation of resources in land-based mining, thereby supplying consumers with dearer minerals from onshore sources instead of cheaper ones from the ocean. Furthermore, monopolistic competition prevailing on both the cobalt and nickel markets will continue to exploit consumers and, in addition, constitutes a serious threat of cartelization. The latter could be a reason for Western DCs to hold still higher strategic stockpiles of such metals and, as a result, impose additional welfare costs on the world economy.

III. UNCLOS: The Trade-Off Between Democracy and Efficiency

The Convention's régime to govern deep-sea mining has been shown in the last section to be an inefficient international public good. It is, therefore, obvious, why the Convention could not be accepted by all countries participating at UNCLOS III, particularly by those holding substantial interests in seabed mining[1]. On the other hand, a paradox must still be resolved: Why did the convention get 130 yes-votes, in spite of its economically unsound regulation for ocean mining? To the extent that seabed mining was indeed the crucial item determining individual countries' voting behaviour, such an outcome may be primarily associated with (a) the specific composition of UNCLOS participants and (b) the voting rule used.

1. Determinants of Voting Behaviour

UNCLOS participants can be classified according to their relative interest in seabed mining as follows:

- pure consumer countries,
- land-based producers,
- ocean miners,
- countries engaged in both onshore and ocean mining, and
- other countries.

Countries belonging to the last group can be thought of as being very poor and expecting almost no benefit at all from additional minerals supply. With the exception of these poor countries, the rest of the world is likely to benefit in the long run from the availability of cheaper minerals. In the short run, however, adjustment on the supply side, i. e., among land-based producers, could impose welfare losses on some land-based producers with comparatively low consumption of the affected minerals. Thus, such expected welfare gains and losses can be plausibly assumed to have substantially influenced the voting pattern at UNCLOS.

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[1] Only three Western countries with a stake in international seabed mining consortia signed the Convention: Canada, France and Japan. However, neither of these countries has hitherto ratified it.

Voting by countries indifferent to seabed mining is obviously dependent on the benefits accruing to these countries from other parts of the Convention; with the exception of land-locked countries, these countries could be safely assumed to have voted in favour of the Convention. Land-based producers of seabed minerals should have also voted for the Convention to the extent that their expected losses in producer surplus are higher than their expected gains in consumer surplus, if they can be expected to benefit from other parts of the Convention. Countries active in both onshore and seabed mining will accept the Convention if their expected gains in consumer surplus do not exceed their losses in producer surplus from land-based production, assuming they are in favour of the remaining parts of the Convention. Finally, pure consumer countries can be predicted not to vote for the Convention on the ground that an inefficient régime to govern seabed mining could prevent ocean mining from materializing and, thus, impose losses in consumer surplus on these countries which amount to their foregone (expected) gains from cheaper minerals availability. Therefore, even if the latter countries benefit from other parts of the Convention, they are aware that they could be much better off with an efficient regulation of ocean mining.

It is of course not an easy task to empirically estimate the expected welfare losses and gains from seabed mining. The main reason for this is that the long-term supply and demand schedules for the relevant world mineral markets can hardly be approximated by econometric techniques. Thus, an assessment of losses and gains for individual countries has to be carried out on the basis of estimated decreases in production and consumption values following simulated supply shocks from seabed mining[1]. However, even then serious data deficiencies in some cases and lack of data in other cases preclude a thorough investigation for all countries concerned.

In Table 1 some estimates of potential net gains (losses) associated with seabed mining are presented. The figures reveal that most major land-based producers of seabed minerals will suffer net losses in the short run. This applies to Australia, Canada, South Africa and to the COMECON-countries, as well as to Zaire and Zambia, the two major producers among LDCs. In contrast, Japan, Western Europe and the United States, the major consumers and at the

[1] On this see Foders [1984].

Table 1 - Projected Distribution of Net Gains (+) and Losses (-) from Deep-Sea Mining Under Open Access Among Selected Countries[a] (millions of 1981 US-$)

Country/ Region	Seabed Mining Output Scenario	
	Low	High
Developed Countries		
Australia[b]	-895.2	-1811.0
Canada	-1686.4	-3925.2
Japan	1617.7	2660.5
South Africa	-265.0	-610.1
United States	1480.6	1742.2
Western Europe	1904.3	2382.5
COMECON	-94.4	-223.5
Developing Countries		
Zaire	-3441.0	-3942.3
Zambia	-307.9	-353.7

[a] Computed as decrease in consumption value - decrease in value of land-based production, with costs of seabed mining assumed to be lower than onshore mining costs. Net gains (losses) were calculated for the period 1988-1995, assuming that seabed mining begins hypothetically 1988, and discounted to 1988 with a rate of 10 %.

[b] Including New Caledonia.

Source: Foders [1984]

same time potential ocean miners, enjoy net gains. From this one can infer that, provided the benefits accruing to these countries from other parts of the Convention are equally distributed among them, countries expecting net losses should have accepted the Convention as it stands and that countries expecting net gains should have opposed it.

Confronting this analysis with the actual voting behaviour of these countries on April 30, 1982, when the Draft Convention on the Law of the Sea was voted upon (Table 2), yields some significant results: Voting by Australia, Zaire, Zambia and other developing producers can be readily explained in terms of the benefits they expect from seabed mining; the same applies to Western Europe and the United States. Other countries can be plausibly assumed to have voted either following political motives or expecting considerable benefits from other parts of the Convention. However, Japan offers an interesting paradox: She voted in favour of the Convention although she was shown (Table 1) to be the country expecting the highest net gains from seabed mining.

Unfortunately, though, the votes apparently related to pure economic cost-benefit thinking only amount to a subset of the 152 votes recorded on the occasion under study. For most of the 116 'yes' votes from LDCs were not submitted by land-based producers of seabed minerals. The bulk of LDCs favouring the Convention seem to have done so either because they are coastal states or because they belong to the Group of 77, or for both reasons.

Membership in the Group of 77 can be expected to have had a significant incidence in LDCs' voting behaviour due to the Group's commitment to establish a New International Economic Order. Elements of this "new order" with consequences for the international community are the proposal to introduce government-like intervention on the international commodity markets like, for instance, a common fund to finance buffer stocks and multilateral commodity agreements. Their counterpart in maritime law is the Convention's régime to govern seabed mining with its overprotection of land-based mineral producers and discrimination against potential ocean miners.

Table 2 - Voting Behaviour and Mining Activity of Selected UNCLOS Participants

Country	Mining Activity		Country	Mining Activity	
	Seabed Mining	Onshore Mining		Seabed Mining	Onshore Mining
Developed Countries			Developing Countries		
'Yes' Votes (14)			'Yes' Votes (116)		
Australia	-	x	Zaire	-	x
Canada	x	x	Zambia	-	x
France	x	-	Others		
Japan	x	-	Land-Based Producers	-	x
Others	-	-	Rest	-	-
'No' Votes (1)			'No' Votes (3)		
United States	x	x	Israel	-	-
Abstentions (17)			Turkey	-	-
Belgium	x	-	Venezuela	-	-
Germany (F. R. of)	x	-	Abstentions (1)		
Italy	x	-	Thailand	-	-
Luxembourg	-	-			
Netherlands	x	-			
Spain	-	-			
United Kingdom	x	-			
Soviet Union	x	x			
Socialist Eastern Europe[b]	-	x			

[a] Voting results on April 30, 1982, at the eleventh session of UNCLOS III in New York.

[b] Excluding Romania.

Source: Voting results were taken from Platzöder, Vitzthum [1984].

Since the creation of the Group of 77 in the late sixties, international organizations, notably the UN, can be observed to have repeatedly proposed programs for more dirigism in the international economy. An outstanding, well-known example is the performance of UNCTAD, the United Nations Conference on Trade and Development. Consequently, one can not exclude the possibility that LDCs which are non-members of the Group of 77 have nevertheless voted for the Convention on the ground that they were influenced by the "Zeitgeist" prevailing in such international conferences as UNCLOS.

2. Procedural Rules at UNCLOS

The overall importance of LDC votes for the outcome of UNCLOS stems from their number: Their 116 'yes' votes easily surpassed the two-thirds majority (100 votes) needed. Even if all the countries interested in ocean mining would have opposed the Convention, they could not have changed the outcome. A basic question arises at this point: Was the voting rule used at UNCLOS appropriate for an international conference aiming at a redistribution of ocean wealth among the countries of the world? The answer is no. There are several reasons for this.

The Convention on the Law of the Sea was adopted by a recorded vote strictly following the rules of procedure agreed upon at the second session of UNCLOS. In particular, events turned out to be an application of the "Gentleman's Agreement"[1] which provided for voting if the Convention failed to achieve unanimous acceptance[2]. The allocation of votes was done in the fashion of the UN's General Assembly, namely on a one-country-one-vote basis.[3]

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[1] The declaration incorporating the "Gentleman's Agreement" was approved both by the UN General Assembly and by UNCLOS III [Platzöder, Vitzthum, 1984].

[2] Consensus seems to have been emphasized at UNCLOS III because experience at the First and Second UNCLOS had shown that a two-thirds majority could not be easily attained. On this see Sohn [1975], Ganz [1977] and Barston [1983].

[3] Unfortunately, though, voting was not practiced until the eleventh session, after almost nine years of negotiations. For voting at some earlier session could have revealed that consensus was an utopic goal impossible to be achieved by such a heterogenous mix of participants even after a hundred sessions. Logrolling or vote-trading is not very likely to have dramatically

footnote 3 continued p. 14

Traditionally, multilateral organizations concerned with issues in international law have either a purely recommendatory character or, alternatively, produce enforceable rules supposed to be binding for member states[1]. The United Nations Conference on Trade and Development is an example of an organization whose resolutions are nonbinding. The International Monetary Fund (IMF) can be cited as an example for a task-oriented organization that takes decisions directly binding on member countries. Interestingly, both organizations have very different formal voting procedures. Whilst UNCTAD works with a one-country, one-vote rule, the IMF makes use of a weighted voting system[2]. Further, at UNCTAD sessions agreement is achieved through majority voting (simple or two-thirds majority), whereas at the Fund special majorities are required for decisionmaking.

To the degree that an organization producing enforceable norms binding on member countries can be said to be more efficient than purely recommendatory agencies, international decisionmaking faces the dilemma of having to choose between (a) more democracy but less efficiency and (b) less democracy but more efficiency. History shows that this election was not always decided by the issues at stake, but at least there seems to have been a tendency in this direction. In this respect, the tragedy of UNCLOS was that its agenda contained both topics which should have been discussed in a task-oriented agency and topics that could be dealt with efficiently in a forum like UNCLOS. Seabed mining should have been excluded from UNCLOS, whereas other fields of maritime law widely established in international customary law and awaiting

continued footnote 3 from page 13
influenced the outcome, since general agreement on most of the other parts of the Convention is a well-known fact. Only a few countries have openly rejected the Convention on grounds unrelated to seabed mining: Israel, Turkey and Venezuela voted against it, whereas Luxembourg, Spain and Thailand abstained. Actually the parts of the Convention not refering to seabed mining are generally acknowledged to codify current international customary law.

[1] Zamora [1980] distinguishes among three such decision levels. However, for the argument developed in this paper the two extreme cases will suffice.

[2] A detailed analysis of the IMF's weighted voting system is offered by Gold [1972, 1977].

codification were efficiently handled at the Conference. Moreover, seabed mining could be put high on the agenda of UNCLOS apparently because the agenda was agreed upon by majority voting[1]. Consequently, those countries enjoying majority support at UNCLOS were able to determine the issues to be discussed at later sessions.

Thus, majority voting at UNCLOS has failed to produce efficient decisions not only on substantive matters but also on procedural items. This result clearly reflects the hypotheses on majority voting put forward in the theoretical literature[2] which emphasize the shortcomings of majority voting in cases where the degree to which voters are affected by their collective decisions is not equally distributed among them. Applied to UNCLOS III one can conclude that seabed mining has been dealt with under procedural structures which do not correspond to the underlying economic realities of the countries concerned. Seabed mining should have been on the agenda of a specialized agency functioning very much like the IMF in formal procedural matters.

IV. Alternatives to the Convention: The Mini-Treaty Solution

The Convention on the Law of the Sea has been shown to offer an inefficient legal-institutional framework for seabed mining. In the last section some hypotheses were presented in an attempt to explain inefficiencies in the production process of such an international public good. One of the main conclusions from the last two sections is that countries with an interest in seabed mining have not been well served by collective action at UNCLOS. Their demands concerning a sound international régime to govern ocean mining have been virtually ignored. Thus these countries are presumably the big losers of UNCLOS III.

In such a situation it is reasonable for the minority to consider the possibility of creating alternative institutions in which the preferences of these countries

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[1] On this point see Eckert [1979].

[2] See Tullock [1959], Buchanan and Tullock [1962] and Buchanan [1973].

Table 3 - Estimated Benefits of Seabed Mining for Western Countries Under Alternative Institutional Settings (millions of 1981 US-$)

Country/Region	Total Net Gains From Seabed Mining[a]							
	Mini-Treaty Solution				UNCLOS Regime[b]			
	Costs of Seabed Mining[c]							
	Case A		Case B		Case A		Case B	
	Output Level of Seabed Mining[d]							
	Low	High	Low	High	No Seabed Mining	Low	No Seabed Mining	Low
Canada	-1686.4	-3985.2	-1841.7	-4342.2	(3985.2)	-1711.3	(4342.2)	-1866.6
Japan	1617.7	2660.5	1462.4	2303.5	(-2660.5)	1592.8	(-2303.5)	1437.5
United States	1480.6	1742.2	755.6	76.4	(-1742.2)	1364.5	(-76.4)	639.5
Western Europe[e]	1904.3	2382.6	868.6	2.8	(-2382.6)	1738.5	(-2.8)	702.8

[a] [decrease in consumption value - decrease in value of land-based production] - decrease in value of seabed production (only case B of seabed mining costs). Net gains were computed for the period 1988 - 1995 and discounted to 1988 with a rate of 10 percent.

[b] Including payments to the Seabed Authority, i. e. fixed fees and royalties as stipulated in the Convention. Figures in parenthesis are foregone gains (-) and saved losses (+).

[c] Case A: first generation costs of seabed mining are constant and in line with prices prevailing after the supply shock from the ocean.
Case B: first generation costs of seabed mining are constant and in line with base-case prices.

[d] Low: 5 mill. tons of manganese nodules p. a.; High: 15 mill. tons of manganese nodules p. a.

[e] Belgium, France, Germany (F. R. of), Italy, Netherlands, United Kingdom.

Source: Foders [1984].

Table 4 - Contribution to United Nations Budget of Western Countries Interested in Seabed Mining, 1970, 1975, 1980

Financial Year	1970		1975		1980	
Country	%[a]	1000 US-$[b]	%[a]	1000 US-$[b]	%[a]	1000 US-$[b]
United States	31.57	50 378.8	25.00	81 268.8	25.00	149 735.6
Japan	3.78	5 316.2	7.15	20 030.7	9.58	49 055.1
Germany, F. R.	-	-	7.10	19 890.6	8.31	42 552.0
France	6.00	8 438.5	5.86	16 416.8	6.26	32 054.8
United Kingdom	6.62	9 310.4	5.31	14 875.9	4.52	22 837.8
Italy	3.24	4 556.8	3.60	10 085.4	3.45	17 666.0
Canada	3.02	4 248.1	3.18	8 912.5	3.28	16 796.7
Netherlands	1.16	1 631.4	1.24	3 473.9	1.63	8 346.5
Belgium	1.10	1 547.1	1.05	2 941.6	1.22	6 247.1
Sum	56.49	85 427.3	59.49	177 896.2	63.25	345 291.6
UN Total	100.16	146 846.3	100.00	291 394.4	100.6	533 797.6

[a] Percentage scale of assessment.

[b] Net contribution to UN regular budget after allowing for credits, other revenues, and adjustments.

Source: UN [a].

can be adequately represented[1]. The problem of optimizing a country's participation in international organizations according to the costs and benefits involved is, of course, not new, and has also been addressed in the theoretical literature[2].

In the case studied in this paper, a quantitative assessment of costs and benefits associated with alternative organizations is extremely difficult, due to the fact that these alternatives lack historical data. Nonetheless, it should be useful to compare (a) the net losses incurred by potential ocean miners if they would accept the Convention with (b) the net gains these countries could enjoy if they would join a separate club (Mini-Treaty Solution) and engage in seabed mining virtually like under a régime of open access.

Table 3 presents estimates of the net gains (losses) accruing to countries potentially active in ocean mining under different institutional settings, cost scenarios and output levels. These figures have been computed under the assumption that the Mini-Treaty Solution does not entail royalty payments or other payments to a central authority. Subject to the limitations of such calculations one can conclude that Japan, Western Europe and the United States would be clearly much better off under the Mini-Treaty Solution than under the Convention. This applies to both a scenario with and to a scenario without seabed mining under the Convention. In the latter case the net gains that would be possible under the high-output scenario of the separate-club solution would turn out to be losses in the sense of foregone gains, if the Seabed Authority should deter mining firms from engaging in seabed mining or, alternatively, set zero production ceilings. Then, only Canada would enjoy gains in the sense of saved losses.

Consequently, it can be said to be rational and Pareto-efficient for countries potentially active in ocean mining to join a separate club among few, homogeneous parties with low expected transaction costs. In fact, considering that the Seabed Authority envisaged in the Convention could render seabed mining totally unprofitable, the Mini Treaty-Solution seems to be the only viable alternative for ocean mining to materialize.

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[1] See, for example, the "Agreement Concerning Interim Arrangements Relating to Polymetallic Nodules of the Deep Sea Bed" signed by Germany (F. R. of), France, the United Kingdom and the United States in 1982.

[2] See especially Buchanan [1968] and Olson and Zeckhauser [1968].

Another paradox of UNCLOS III is that the countries financing over 50 % of the costs incurred by the Conference during its nine-year life (Table 4) have been left with the need to consider new forms of organization for seabed mining; they cannot realistically be expected to either entirely waste the resources already invested in this sector of the world economy or to ignore the vast economic rent associated with the recovery of polymetallic nodules from the seabed.

V. Concluding Remarks

UNCLOS III has been a marathon conference dealing with a redistribution of ocean wealth. The legal framework for this redistribution of future income flows from ocean use was expected to be adopted by consensus by all participants. Unfortunately, although the bulk of the issues included in the Convention can be safely said to be supported by almost every country in the world, differences of opinion on only one issue, namely the régime to govern deep-sea mining, were capable to seriously challenge the significance of the whole Convention and obliged the Conference to finally resort to majority voting in order to prevent it from continuing indefinitely.

This outcome seems to have been determined by the particular mix of topics placed on the Conference's agenda and by the procedural rules used. The principal shortcoming of these structures was that they did not appropriately reflect economic realities. What can we learn from this? One lesson from UNCLOS III is to realize that future conferences on, say, the use of Antarctica or outer space should not be carried out in the fashion of UNCLOS, due to the unequal distribution of the substantial interests involved among the countries of the world. Another lesson from UNCLOS III is that countries should be aware of the costs and benefits likely to be associated with collective actions. Further, expected costs and benefits as well as the underlying preferences of countries may change in time. Therefore, the decision to join a given organization at one point in time should be periodically revised according to actual developments. A recent example can be cited to illustrate this: The United States seriously questioned her membership in the United

Nations Educational, Scientific and Cultural Organization (UNESCO) on the grounds that she provided an important share of UNESCO's funds but disapproved of their allocation. Also other European countries, particularly the United Kingdom, have threatened to also evalue their net benefits from UNESCO in a new spirit.

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