

CARROLL LOUIS WILSON
MC 29 BOX 54 F 2093

Club of Rome: Correspondence, 1971

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OK

December 28, 1971

CR

Dr. Aurelio Peccei
The Club of Rome
Via Giorgione 163
00147 Rome
ITALY

Dear Dr. Peccei:

I hope that my December 23 cable reached you over the holidays, and will be of some assistance in your arrangements with foreign publishers. We have been proceeding with the editing process with Dennis and Dana, and I am happy to report that the manuscript is coming into excellent form. Barring any unforeseen crises, I expect that the book will be essentially complete by the end of December as planned. In fact we anticipate sending roughly half the text to our printers on December 29 so that composition can begin, and we will give them the final portion of the book as early as possible in January. All original art work should be completed by January 17, after which photo offset plates will be made.

As we move ahead in planning the promotion of The Limits to Growth, a number of questions have arisen that we would like very much to discuss in person with you. I wonder whether your travels will bring you to the United States again in the near future. We are not yet prepared to suggest that a special trip is necessary for this project, but we would like to take advantage of any opportunity to meet with you at an early date. Correspondence by international mail or cablegram is useful but cumbersome, and on certain points there can be no substitute for a direct meeting.

For example, we would like to review with you the status of The Club of Rome plans for Phase II of the Project on the Predicament of Mankind. I realize fully that much of the work on Phase II is still in a preliminary stage and that all plans are tentative at this point. But, whenever possible, we would like to coordinate the publicity and promotion of Limits with anticipated Club of Rome developments over the next year. It also would be useful for us to know whether, and to what extent, members of The Club of Rome in the United States will be involved in Phase II.

We also have begun to set dates for briefings in connection with the release of the book, and, if possible, we would like very much for you to try to arrange your schedule to be in Washington on the afternoon of Thursday, March 2 to participate with Dennis and Dana Meadows in such a briefing. We plan to invite only selected journalists (from newspapers, magazines, radio, and television) with whom we already will have been in contact about The Limits to Growth. We will have talked with these people about the book, and will have provided them an advance copy of the manuscript. The purpose of the briefing will be to give them an opportunity to ask questions directly of the authors about the report, and of you about The Club of Rome, the Project on the Predicament of Mankind, and other plans for the future. We do not expect that this briefing itself would result in news coverage, but we hope it would insure more accurate and complete reporting on the book at the time of publication on March 6. Will March 2 be convenient for you?

Similarly, we would like to go over with you proposals for using television talk shows -- if we are successful in interesting any of the networks -- for the promotion of Limits. We have in mind, for example, trying to convince a leading television personality such as David Frost to devote an entire 90-minute broadcast to a discussion of the book with participants such as Dennis and Dana Meadows, yourself, Barry Commoner, and other respected individuals who would take a keen interest in the book, whether as supporters or critics. I recall from our conversation in New York that you felt you would like to set aside time to take part in public appearances related to the book, especially to help defend its thesis.

Even in advance of our discussions with you, we would greatly appreciate your sending us your biographic summary as well as two glossy prints of a photograph that we might use with the media, whenever appropriate, for promotion of the book.

I will meet with Dennis Meadows in Philadelphia on Wednesday, December 29, to go over our publicity and promotional plans, and to discuss the degree to which we can count on participation by Dennis and other members of the M.I.T. research team. I will of course bring him up to date at that time on the various points I have raised with you in this letter.

So far the only foreign publishers with whom Potomac Associates has been in touch either directly or indirectly have been Diamond (Japan), Mondadori (Italy) and Spectrum (Netherlands). I am happy to report, however, that Universe Books has just received an indication from Penguin of their continued interest in doing the UK edition of The Limits to Growth. Apparently, Penguin was concerned at first that they could not make the March 6 publication date of the US edition, and

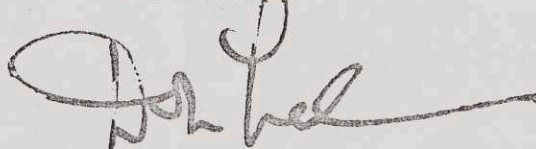
declined Universe's offer of cooperation. But on learning that the US and UK publication dates need not coincide precisely, Penguin changed its answer and Universe Books is proceeding immediately with final negotiations on the UK rights to the book. Obviously, we are very pleased since we regard Penguin as the ideal publisher for this work in England.

As we move into actual production of the book, we realize that it may not be desirable for foreign publishers to purchase duplicate offset negatives of the charts and graphs drawn for our edition. These will be available somewhat later in the production process than we would hope, and every foreign publisher would have to insert translations of the legends and captions in another language. It may be more useful, therefore, for some foreign publishing houses to take clear photo copies of each chart and graph when they are completed by our artist, and to make their own reproductions with textual changes and in sizes suitable for the publication they have planned. We anticipate that we could send out such photo copies by January 21 rather than waiting until the end of January or the beginning of February for completion of duplicate offset negatives. This information may be useful in your discussions with other publishers. Naturally, we would be grateful for the earliest notification from you of completed arrangements for other translations, including the names and addresses of publishers' agents with whom we should be in contact.

I very much look forward to hearing from you, or even better to discussing some of these points with you in person, in the near future.

Best personal regards.

Sincerely

A handwritten signature in dark ink, appearing to read "D. Lesh", with a long horizontal flourish extending to the right.

Donald R. Lesh
Vice President

THE CLUB OF ROME

Rome, January 12, 1972
DAP/amp

NOTE FOR: Dr. Alexander King
Dr. Saburo Okita
Dr. Eduard Pestel
Dr. Hugo Thiemann
Dr. Carroll Wilson ✓

'The Limits to Growth'

This note is just to keep you posted with developments on the book on 'The Limits to Growth'. You may see them from the PA December 28 letter attached hereto. It indicates that:

- the time schedule is being maintained, the book therefore being probably due March 6 (English edition);
- a presentation to the press will be made on March 2. As PA asked, I will try to be on that date in Washington;
- some indications must be given in that occasion, and possibly others, on CoR further activities; and before that date I will try to see some of you (Alex, Eduard and Hugo), asking the others to let me have the advice they consider fit;
- the Dutch, Japanese and Italian publishers are active with PA. I know that the French is on the move; and suggest to Eduard to see that if possible the German one should not be too far behind.


Aurelio Peccei

Enclosure

Secretariat:

- Rome: Via Giorgione 163, 00147 Rome - phone: (06)5107 - telex: Tecnital 61497 - cables: Romclub

Offices:

- Geneva: c/o Institut Battelle, 7 route de Drize, 1227 Carouge, Geneva - phone: (22)439831 - telex: Batel 23472 - cables: Battelle
- Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Jidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501
- The Hague: Club van Rome Nederland, Scheveningseveer 1, The Hague - phone: (70)180280

THE CLUB OF ROME

Rome, December 22, 1971
DAP/amp

NOTE FOR: Dr. Alexander King
Dr. Saburo Okita
Dr. Eduard Pestel
Dr. Hugo Thiemann
Prof. Carroll Wilson ←

The Limits to Growth

*newer
consult
CW*

1. Toilsome start. Further meetings and discussions have been necessary to settle details of this publication. This is due to the scant knowledge that all the concerned parties, including me, have of the legalities and practices of the publishing activity; and also to the difference of the views that I and some of you, on the one side, have of the ethics or practices guiding the research activity with respect to the views held by Dennis on this subject and which he affirms conform the constant US custom when research is made by a University (not a consulting firm or other agencies). All this has required me again to go to New York on the 9th inst., to meet with PA, and to embark on a new series of telephone calls and correspondence. Hereby I keep you informed.

2. English edition. Things seem to proceed well, as Mr. Watts confirmed me during our December 9 New York meeting, and Mr. Lesh writes in his December 14 letter (Annex 1). As it was necessary to decide the number of copies the CoR would order of the US English edition (in order to permit PA to define the corresponding price with Universe Books) I took the liberty of indicating this number in 3,000 copies. They will be distributed by us also in the other English-speaking areas outside the US (UK, Canada and Australia) and to English-speaking people elsewhere.

In Mr. Lesh's December 14 letter you will find indications also on other points concerning all this venture.

Under separate cover, I am sending to all of you (except Carroll, who will have received it in the USA) a copy of the partially edited manuscript as has been already given to some of the foreign

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publishers. (Probably Eduard has already received it from Dennis). As you will see from Annex 1, PA will have the final edited text ready by the end of this month, and I will do the necessary for you to get one copy immediately thereafter.

3. Rights to publish the Book in foreign languages. Dennis wrote me on December 6 a letter (Annex 2) which--I believe, chiefly due to the above reasons--was unacceptable. I had that letter in New York on December 9 and talked to him over the phone in Boston clarifying what appeared to be the main points. As I had to leave the same night for Latin America, I sent him the day after from Buenos Aires the draft of a 'Bona Fide Agreement' between us which seemed to me fair and comprehensive, and an explanatory Note (Annexes 3 and 4). In the meantime, Dennis had come to Europe and on my return to Rome I found a cable by Dana telling me that only Dennis could agree on the terms I was proposing. I had then to phone to Dennis, who was in Venice, and after a long conversation I had his agreement on my proposals (which however he had not seen, but which I illustrated over the telephone), although he maintains that, according to the US standing practice, he feels he is not bound (as I put in my text) to our previous approval to any publication he may want to make on the results of the MIT-CoR project at any time, even before having provided to CoR (the sponsor) with the final documents and results of the research.

This point--namely the CoR right to publish in foreign language the Book-- seems therefore clarified. And I hope to receive in a few days Dennis' confirmation. What remains to be clarified, however, is who has the original copyright, because the latest incarnation of the Book is that it will be co-authored by Dennis-Dana-Behrens-Jorgens, and therefore--in my poor knowledge--Dennis should be authorized by the other three to enter this kind of arrangements.

Anyhow, I think that we can take in good faith agreements with foreign publishers for the Book on the basis of the present verbal and further written agreements with the Authors.

4. English-foreign languages editions coordination. As agreed, it will be made by and through PA. The rights to the foreign language editions pertaining to CoR, we have to enter appropriate contracts with the Dutch, French, German, Italian, Japanese, etc. publishers, although for all practical matters the latter will have to be in contact with PA. These contacts are already under way for the Italian (Mondadori), Dutch (Spectrum), and French (Fayard) editions. Eduard

Pestel and Saburo Okita will have to do the same respectively for the German and the Japanese editions, namely these publishers will have to accredit through me to PA their Agents in New York so to expedite material work.

5. Foreword and Commentary. As you know, in the US edition (and possibly the other English editions, although this point is not yet clarified) the Foreword has been prepared by PA, while the Commentary at the end of the Book is provided by the ExCom Members and the text is the one you already approved.

In the foreign language editions we are at liberty to prepare also the Foreword (or Presentation) ourselves, and I have asked Jane King to take care of letting all the interested parties have the Presentation according to our original text, which has also been seen and approved by you.

This Presentation as well as the (unchanged) Commentary, will be signed by the six of us. But a certain flexibility must be adopted both as far as their text is concerned and those who will sign them, in order to suit the different requirements of each foreign language edition. Therefore, I propose:

- = for the Dutch edition: that we let Frits Böttcher, according to his judgment about the situation and necessities in Holland, make some minor adaptations to both Presentation and Commentary (if there are more important ones, they should be approved by us), and that we invite him to sign both of them alongside the ExCom Members (seven signatures in total);
- = for the French edition: that the same procedure be adopted in France, where Robert Lattès is willing to cooperate both to assure that the translation is perfect and to see that this part of the Book be well attuned with things in France. As you know, the Author of the overall book, Mme. Janine Delaunay, takes care of the parts of the book dealing with the CoR generally and depicts some of the people who have cooperated in this effort.


Aurelio Peccei

Enclosures

THE CLUB OF ROME

Rome, December 29, 1971
DAP/amp

Prof. Frits Böttcher
Club van Rome Nederland
Scheveningseveer 1
The Hague, Holland.

Dear Frits:

I deal in this letter with the details for the Dutch edition of 'The Limits to Growth'.

1. Please find herewith (Annex 1) the draft of the agreement between Spectrum and CoR. The text is very simple and is drawn from the draft that Mondadori has sent me for the Italian edition. I have left blank the percentage that Spectrum should give us on its sale price of the book, but you and I are understood that, due to the fact that this issue will be made by Spectrum on a non-profit basis, this clause may be entirely waved. I have left blank also the number of copies we should receive of the Dutch edition(s), for you to decide how many are necessary, taking into consideration that 5 must be given to Dennis Meadows and we would like to have other 5 in Rome. If it is more expedient, the 'Rome Lawcourt' may be changed into 'The Hague Lawcourt'.

You may prepare with Mr. Otterbeek the final text on the basis of the above, and sign it, or send it here for my signature.

2. Contacts between Spectrum's agents in New York and PA are already on, and I am sending you for your information copy of the letter from Mr. Lesh to Mr. van Zuilen (Annex 2).
3. Following my December 22 Note for the ExCom members, with copy to you, I wish to inform you that the CoR-Meadows agreement has been signed according to the text I had sent to Dennis on December 9-10. For your information, I am attaching herewith the text of this agreement, signed (for CoR) by me on December 27 and by Dennis Meadows (in the name and for the account also of the other authors) on December 20. I join also his letter of the same date (Annexes 3 and 4).

This matter is therefore clear, and I had from PA confirmation that the original copyright rests with Dennis Meadows (by agreement with the other co-authors). And the way is also clear for us to enter the above contract with Spectrum for

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the Dutch edition (and any other foreign language contract).

4. Mr. Oltmans informed me by phone this morning, also in your name, that apparently Mr. van Dieren of the Council for Milieu Defense has received from Dennis Meadows a copy of the final but unedited book text (the same that I handed over to you for the Dutch translation on the 18th inst.); and that Mr. van Dieren and/or others are going to publish this text. In this strange world everything is possible, but I resist to believe that Dennis has made this unwarranted action. In any case, I have immediately sent an ordinary cable to Dennis at MIT, as per copy herewith (Annex 5) and as soon as I have his reply I will let you know. In the meantime, if and when the information is confirmed, a warning in proper legal terms should be sent by Spectrum (or CoR) to the people concerned.

I am sorry the impatience (let us call it so) of Dennis Meadows continues to create confusion in some quarters, particularly in Holland, but I hope that we will be soon over this phase.

All the best.

Aurelio Peccei

Enclosures

JAN 4 1972

THE CLUB OF ROME

Rome, December 29, 1971
DAP/amp

NOTE FOR: Dr. Alexander King
Dr. Saburo Okita
Dr. Eduard Pestel
Dr. Hugo Thiemann
Dr. Carroll Wilson ←

'The Limits to Growth'

1. Foreign language editions.
2. Dutch edition.

As a follow up to my note of December 22, I want to inform that the CoR-Meadows agreement for foreign language editions has been reached, by a document signed by Dennis on December 20 and by me on December 27.

In the meantime, some preoccupation has arisen in Holland because of an alleged distribution, apparently by Dennis, of the book's text to unauthorized people, a thing which may harm the Dutch Publisher, and also the good relations which in our midst are so essential.

To save time, I enclose herewith the letter which I am addressing today to Frits Böttcher and which covers both topics.

3. Relations with Dennis Meadows et al.

I would like to have some guidance from you. Please refer to what I said in point 3 of my December 22 note and to what Dennis writes in his December 20 letter (which is Annex 4 of my today's letter to Böttcher). I would like possibly some comments by Carroll and Eduard, who have seen Dennis recently in Boston and Germany. However, if I do not receive any other indication from you, I will:

= not interfere with the activity of Dennis and other team members as to their presentation of papers at conferences on the work done on our Project, which means that these papers will not have to be cleared in any way by us, and of course will not be submitted in the CoR name;

./.

Secretariat:

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- = stand instead firm against any activity which may impair the rights and interests of foreign language editions vested in CoR and/or publishers, which means that Dennis and the other team members must use maximum restraint until these editions are out (after that, the copyright safeguard will be in force);
- = let Eduard, as seems to me right, handle all matters concerning the Technical Report, asking him to keep us informed about the arrangements he makes with Dennis, VW or others.

4. Other foreign language editions.

The coast is clear and we may proceed. I will inform you as events mature.

Please Eduard and Okita inform me about the German and Japanese editions: the text of the contract may be similar to that for the Dutch edition (Annex 1 to my today's letter to Böttcher).


Aurelio Peccei

Enclosures

Room 26-169

December 17, 1971

Miss Jane King
125 rue du vieux pont De Sevres
92 Boulogne (Paris)
France

Dear Jane:

This is a much belated note to say I did get the revised copy of the commentary and it seems to me appropriate to go ahead. I must say my feelings change from time to time regarding some aspects of this, especially the comments on the behavior of society in the future and its rising to the challenge.

As you may have heard, there was a barrage of criticism by the delegates from Brazil in the Second Committee of the General Assembly on December 1st in which the Club of Rome and the people at M.I.T. were, I think, correctly quoted but attacked with vigor by Ossorio, the Brazilian. This is partly in response to a speech by Pat Moynihan who was sitting as the U.S. delegate.

Brazil is a rather special case in view of its highly developed regions and vast areas but the arithmetic still holds true that a finite amount of resources when divided between 2X people makes half as much per person as when divided by 1X.

I managed to duck another visit to Geneva this week but hope that my next journey will bring me in the direction of Paris and that I will see you.

With best wishes for the holidays and the New Year and the Club of Rome.

Sincerely,

Carroll L. Wilson

CLW:F

125 rue du vieux port de Seines

92 Boulogne.

19/11/71

Dear Carroll,

I got Aurelio's final revised version this afternoon and have made a few corrections and changes before leaving for London tonight. (until Tuesday night)

Please let me have your comments and suggestions for changes by Saturday 27th, before the final version is signed or rather ready for signing.

I think there should be a little more stylistic tightening up, which I will see about early next week.

I loved hearing from you the other evening

Best wishes

Jane

DEC 13 1971

9-10 December 1971
in flight from NY to BA.

*Copy Control
for
Amelia*

Note for Dennis

I enclose Draft of what I consider the proper document to be exchanged between us at this stage, after our telephone conversation of yesterday (Dec. 8) afternoon. I think that, as it is, it has many points of merit. As I have not with me the COR-MIT Contract, please fill the ~~blanks~~ in accordance with it

I have to add only two remarks:

- 1 - About the Title: it cannot be 'a Report of COR', because this would have entailed approval of the text by COR (which has not taken place). It is a Report by the Authors (and I have to remind you that to my disconcert you wanted to change its character only a few weeks ago from its previous one of 'a Report to COR' to a document of your own, which has meanwhile had further evolutions passing through a phase in which you

(6)

wished to present it as a 'Dennis-Dana', or better 'Dana-Dennis' one, to a final incarnation as a 'four-some' effort, as I learned last night and we agreed that should not be changed again): and it cannot be either 'a Report to CoR, because we would have made ~~yet~~ full circle again, coming back to the first version (the departure from which I had some pain to explain to my ExCom colleagues), which occurrence would require at least their reading the final text before publication.

Therefore I suggest the formula of 'a Report for CoR's Project....' as indicated in the Bone Fidle Agreement enclosed - I am sorry I did not notice this point when Mr. Watts handed me over some copies of the manuscript. Though not a linguist, I believe that this formula (a) is correct, (6)

is widely used, and (c) represent the reality of the relationships involved.

2. About the Timing: as time is ever more of essence (I mean specifically) in clarifying and defining these simple but necessary agreements, and as you told me that next week (starting Monday 13?) you will be in Venice, I ask you or Dana kindly:

- = to send me to Rome your revised text of this Draft Agreement very urgently (I hope ^{that} a couple of days after receiving this letter will be enough)
- = to cable me in meantime if you are in accord or not, and if not what are your suggestions. My address:
- = till Monday 13, FIATMOTOR BUENOS AIRES, tel. 346.5377
- = Tuesday 14, FIATMOTOR RIO DE JANEIRO, tel 479.617
- = Wednesday 15, ROME (usual address)
- = Thursday 16, TORINO (c/o FIAT, tel. 6565)
- = Friday 17, BRUSSELS (but this date is

(d)

already, too late for you to cable or phone me, because ^{some} ~~the~~ Foreign Language publishers have already lost patience for our continuous delays)

As you mentioned that you have spoken with Carroll, I am sending copy of this Note and the enclosure to him.

On second thought, I think I must send copy of everything also to Mr. Watts (and hope you do not mind) because all things are so interrelated and we are bound by the same moral interests and ~~the~~ desire to simplify and make effective all steps to bring out this message well and quick. To Mr. Watts inter alia, as I told you over the phone, I also asked to kindly send me the complete (and clear) formula publishers want to include in the back of the first or second page after the

(e)
jacket to state whose rights are
those of the original versions and how
they (the publishers) are now entitled
to put out the book in their language

Hope now everything will be quickly
in order, so that each of us can
think to something else -

Love to Dana -

Cordially
Aurelio

1 Annex

copy to Carroll
to Mr. WATTS

BONA FIDE AGREEMENT

between

= THE CLUB OF ROME (here called 'COR')

and

= Professor DENNIS L. MEADOWS (here called 'Author')

1 - With reference to ~~point~~ the Contract established on between COR and The Massachusetts Institute of Technology (MIT), COR ^{hereby} agrees:

= that, in view of the present world situation and the interest and publicity arisen by and around the Draft Report circulated during the last months for comment only, the book mentioned in point... of above Contract be published by Author even before the presentation by MIT to COR and approval by COR of the results and documentation (including a Technical Report) of the research project contemplated in that Contract;

= that Author associate in the book's authorship Dana ----, Bohrens... and Jürgens (the group being called here 'Authors');

(2)

= that the book be called 'The Limits to Growth: a Report for The Club of Rome's Project on the Predicament of Mankind', and be brought ~~about~~ in the English language editions under the aegis of Potomac Associates Inc. of Washington (PA)

- 2 - COR takes note that all rights to the English language editions have been assigned to PA by direct agreement between authors and PA, without cost, obligation or benefit for COR.
- 3 - Authors hereby assign all rights to all Foreign language editions to COR and, in view of the public service motivation of this publication, agree to receive from COR in payment for any cost or right a symbolic sum only, in the amount of one dollar.
- 4 - Responsibility for the book contents rests with Authors - It is also their responsibility to secure at no cost or

obligation for COR all permits and consents which may be necessary from third parties, including MIT, concerning the book publication and distribution.

5- It is the responsibility of COR to make all arrangements with PIA for coordination of the English and Foreign languages editions -

→ Publication of this book does not preempt Authors' rights to publish, individually or collectively, other books or papers on the research made by MIT for COR, at any time after COR approval of ^{the} Technical Report. Before that date, prior approval must be secured from COR.

6- COR will send ^{Authors} five free copies of each Foreign language edition it authorizes.

Cambridge

.....
(Aurelio Pececi for COR)

.....
(Dennis L. Meadows in the name and for the account also of other Authors)

A G R E E M E N T

Between

UITGEVERIJ HET SPECTRUM NV, with registered office in De Meern, Holland, at Park Voorn 4 (hereinafter referred to as the 'Publisher')

and

The CLUB of ROME, a non-profit seeking Association set up in Geneva and with registered office in Italy at Via Giorgione 163, Rome (hereinafter referred to as the 'Proprietor')

WHEREAS

- the Proprietor guarantees that he is the sole owner of all and every right to publish, in the Dutch language, the book whose original title is 'THE LIMITS TO GROWTH - A Report for the Club of Rome's Project on The Predicament of Mankind' by Dennis L. Meadows, Donella H. Meadows, William W. Behrens III, and Jørgen Randers and which contains also a Presentation and Commentary by the Executive Committee of The Club of Rome (hereinafter referred to as the 'Work');
- the Proprietor consequently undertakes to hold the Publisher harmless from any copyright claim that might be asserted by third parties against the Publisher by virtue of the performance by the Publisher of the terms of this Agreement;
- the Proprietor exclusively transfers to the Publisher, who hereby accepts, the rights to print, publish and sell the Work in the Dutch language during the full term of any copyright on the Work,

IT IS HEREBY AGREED THAT:

1. As payment for the transfer of the exclusive rights of publication, printing and marketing of the Work in the Dutch language, the Publisher shall accord the Proprietor a percentage of on the sale price of the copies actually sold.

On the copies transferred at a reduced price to 'Remainders' or similar organizations, the percentage shall be credited to the Proprietor on the price received.

A statement shall be presented to the Proprietor twice a year, by the end of March and September for sales effected in the six-month periods to 31st December and 30th June, respectively.

No percentage shall be due to the Proprietor on copies destroyed, specimen copies, free copies or those for the press, which are conventionally fixed at 10%.

2. The Publisher shall give free of charge to the Proprietor upon publication copies of the Work. The Proprietor will have the right to purchase other copies of the Work at 50% of the Publisher's sale price.
3. The Rome Lawcourt shall be the competent body to deal with any controversy arising out of the present Agreement.

Drawn up in double original copies on the

THE PROPRIETOR

THE PUBLISHER

EXCERPT FROM POTOMAC ASSOCIATES CONTRACT

WITH DENNIS MEADOWS

3. Rights. Potomac shall copyright the Work in the Agent's name. Potomac shall have the sole and exclusive right to print, publish, and sell the Work in the English language during the full term of any copyright on the Work. Potomac shall also control all rights in the English language Work of digest, abridgment, condensation through a publisher, motion picture, dramatic, radio, television, mechanical rendition and/or recording, and other rights that may hereafter come into existence, with exclusive authority to dispose of said rights.

The Agent warrants that he has exclusive copyright privileges for the Work in the English language and that he will hold Potomac harmless for any copyright claim that may be asserted against Potomac by virtue of performance by Potomac of the terms of this Agreement.

Potomac agrees to give the Agent upon publication five (5) copies of the cloth-bound edition and ten (10) copies of the paperback edition of the Work. The Agent will have the right to purchase copies of the Work in cloth-bound and paperback editions at fifty (50) percent of the publisher's list price.

Aurelio
Dr. Peccei - info.

December 22, 1971

Mr. Antoon van Zuilen
United Dutch Publishing Companies, Inc.
55 West 42nd Street
New York, New York 10036

Dear Mr. van Zuilen:

W
Let me hasten to reply to your letter of December 21, which arrived in Washington this morning, concerning plans for our publication of The Limits to Growth in cooperation with The Club of Rome. The general understanding of the project conveyed in the letter you received from Mr. Otterbeek was correct, but there were several items of detail that require clarification.

Potomac Associates is empowered to control all English language rights to The Limits to Growth by contract with Professor Dennis Meadows of the Massachusetts Institute of Technology, who holds the international copyright to the work under the Berne and Pan American Copyright Conventions. We do plan to publish the US edition through Universe Books on March 6, 1972 with a substantial printing, but not by any means 100,000 copies.

*
In our recent meetings with Dr. Aurelio Peccei, the last of which took place in New York on December 10, we have agreed to work closely with those publishers Dr. Peccei has lined up for publication of the book in other languages. In keeping with that agreement, we sent to Dr. Peccei on December 14 a set of manuscripts of the book for his further distribution to foreign publishers. I should stress, however, that these manuscripts were still in a preliminary draft stage, and are subject to revision both by the authors and by Potomac Associates before the final copy is ready for the printers. We supplied these preliminary drafts with the goal of facilitating the translation process, on the understanding that we would send the book in final form to cooperating publishers when it is ready in late December or early January. We feel very strongly, and I am certain you agree, that all translations of this work -- and we understand there will be a number -- must be based on the same basic English language text.

We also discussed with Dr. Peccei on December 10 the handling of the many charts and graphs that constitute an integral part of the book. Your interest in obtaining "sharp prints" of all these graphic materials at the earliest possible

opportunity is entirely understandable, but somewhat premature. Many of the charts, graphs, and computer runs are still in the process of refinement by the authors at M.I.T., and we ourselves have not yet received final copies of all the graphics. When we have these in hand, we will have them redrawn by our designer to insure a uniform style and appropriate dimension for the basic paperback edition we intend to publish. Obviously, this process also will take some time. On this point I have enclosed a brief excerpt from my letter of December 14 to Dr. Peccei relating to our provision of copies of the manuscript and graphic materials to foreign publishers. As you will see, there would be no purpose served by your coming to Washington now, since we do not expect that photographic negatives suitable for offset reproduction will be available before the end of January or beginning of February.

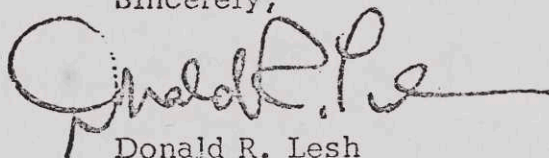
I also note that the Spectrum edition will be published on a non-profit basis. Neither Potomac Associates nor Universe Books, I should explain, is a non-profit organization and we do intend to charge what we consider a modest and fair fee for the use of these graphic materials to help defray our direct costs of design and production of offset plates. We have not yet established that fee, because we have not yet received a complete cost estimate from our printer. I will of course keep you informed on this point.

Potomac Associates is very eager to be of assistance in the publication of this extremely important and challenging book in other countries, and I regret that some of my points here necessarily indicate a delay in the timetable anticipated by Mr. Otterbeek. But the lines of communication on this project tend to be very long and complicated. We will do our best to meet all expectations within the imperatives of the publication of this book.

Please do not hesitate to contact me again if I can be of further assistance on this matter.

Best regards.

Sincerely,



Donald R. Lesh
Vice President

Enclosure

✓ cc: Dr. Aurelio Peccei

EXCERPT FROM DECEMBER 14 LETTER

2. Manuscript Copies. Also enclosed are nine additional copies of the manuscript in current form, which I understand you wish to have for use with foreign publishers and for distribution to the Executive Committee of The Club of Rome. As Mr. Watts promised in New York, we will insure that copies of the manuscript in final edited form will be available to you and to foreign publishers for completion of translations by the end of December. We will be happy to send these copies by international airmail directly to the publishers concerned if you wish us to do so, and provide us with the necessary addresses.

Although these copies will include xerox reproductions of all graphic materials included in the text, I should point out that those foreign publishers wishing to use our graphics will not be able to proceed with their own editions until they receive the photographic negatives made from the offset plates of the charts and graphs. These are produced for insertion in the text by the printer as one of the final steps of book production; we now anticipate that the offset plates will be ready in the first week of February. We will make every effort to supply duplicate offset negatives to interested foreign publishers -- at an appropriate fee to help defray our costs -- immediately thereafter.



UNITED DUTCH PUBLISHING COMPANIES, Inc.

U.S. Division of Verenigde Nederlandse Uitgeversbedrijven N.V.

DE
0273
11
J. 10

Antoon van Zuilen
DIRECTOR

December 21, 1971

Mr. Donald R. Lesh,
Vice President,
Potomac Associates Inc.,
1707 L-Street N. W.,
Washington, D. C.

Dear Mr. Lesh,

This letter is in reference to a letter dated December 14, 1971, which I received today from our publishing subsidiary, Uitgeverij Het Spectrum, in the Netherlands (xerox copy enclosed).

My purpose of contacting you, in my capacity as the American representative of United Dutch Publishing Companies in the Netherlands, is to obtain very sharp prints of all the charts, graphs, and other illustrations of "The Report of the Club of Rome", which will be published by Het Spectrum on a non-profit basis.

// If necessary, I'll come to Washington within the next few days to pick up this urgently needed material and discuss any other details that might arise.

Please, contact me as soon as possible, either by phone or mail.

WITH SEASON'S GREETINGS

Sincerely,
United Dutch Publishing Companies, Inc.

Antoon van Zuilen

vz.kl
Encl.

De Heern, 14th December 1971.

Dear Dr. van Zuijlen,

Copy

You will remember that you recently took information for us about "The report of The Club of Rome".

You told us that M.I.T. Prof. Denis Meadows (who is the author of the report) advised to contact Dr. Aurelio Peccei, president of The Club.

We can now inform you that Het Spectrum has come to an agreement with The Club of Rome to publish the Dutch version of their first report on "The project on the predicament of mankind" entitled "The limits to growth; a global challenge". We will make it enz "Aula nr. 500" and sell it on a non-profit basis.

The American version will be published on the 6th March 1972 by Universe Books (100.000 copies), is produced by Potomac Associates Inc.

The English manuscript will be made available to us for translation on the 18th December 1971.

We had a discussion with Dr. Peccei and Prof. Böttcher (Dutch member of The Club) in The Hague on the 3th of this month.

Meanwhile Dr. Peccei went to the U.S.A. to talk to a.o. Potomac. He will tell them that you will contact Potomac to obtain for us very sharp prints of all the charts and graphs and other illustrations of the report so as to avoid that we will have to make completely new illustrative materials.

Of course this again should be done "non-profit". We will have to do the translation and insertion of the inscriptions. According to Potomac's production scheme the illustrations will be ready for the printer on the 18th January 1972.

May we ask you to kindly go into this matter.

Please contact:

Potomac Associates Inc.

1707 L-street N.W.

Washington D.C.

Vice president: Donald R. Lesh

and inform us of conditions and date of dispatch.

Our edition of The report should not be later than the American edition, so we will have to hurry.

Thank you in advance for your best cooperation.

Sincerely yours,
Editorial Department,

J. G. Stierbeek.

December 14, 1971

Dr. Aurelio Peccei
The Club of Rome
Via Giorgione 163
00147 Rome
ITALY

Dear Dr. Peccei:

Mr. Watts has shared with me his notes on your long and productive meeting in New York on December 10. We remain highly pleased with the progress of the book, even if occasionally frustrated by the delays we are coming to understand are an inevitable part of the publishing business. In any event, as Mr. Watts explained during your meeting, we are so excited by the prospects of The Limits to Growth that we have postponed all other publication plans to insure that this book will be the next in our Potomac Associates series.

Today we received a copy of your December 9-10 note to Dennis Meadows with your counter-proposal for an agreement between Dennis and The Club of Rome on handling of foreign publication rights. It was very good of you to keep us informed. Although Potomac Associates will not be a party to the agreement, we do retain a very active interest in seeing that all details associated with publication of the book are handled to the satisfaction of everyone concerned.

During your conversation in New York, Mr. Watts suggested that Potomac Associates would follow up on a number of related matters and, if I may, I would like to use this letter for that purpose. I believe the major points were:

1. Foreign Publication Rights. You mentioned to Mr. Watts your keen interest in having some precise legal formulation to satisfy foreign publishers that The Club of Rome is empowered to dispose of publication rights for The Limits to Growth in languages other than English. Our conversations yesterday and today with our lawyer have helped to clarify a bit of confusion (at least on my part) over what was needed.

The lawyer explained that we are dealing with two related but separate legal concepts: (a) international copyright of the manuscript of The Limits to Growth, and (b) rights to publish that manuscript. Dennis Meadows will hold the worldwide copyright to The Limits to Growth under the terms of the Berne and Pan American Copyright Conventions. He has contracted with Potomac Associates to handle the English language publication of the work, and is now in the process of contracting with The Club of Rome to handle publication in other languages. Our lawyer suggested therefore that your agreement with Dennis Meadows in this regard might be patterned after the section governing disposition of rights in the contract signed with Potomac Associates. I have enclosed the pertinent excerpt from our contract, and I have proposed this solution to Dana Meadows (since Dennis is out of the country). I believe the next step is up to Dana and Dennis, but I feel certain that you will have their response in the very near future.

All editions of the book, our lawyer advises, should include the following essential language for protection of the copyright:

Copyright © 1971 by Dennis Meadows. All rights reserved including rights secured under the Berne and Pan American Copyright Conventions.

2. Manuscript Copies. Also enclosed are nine additional copies of the manuscript in current form, which I understand you wish to have for use with foreign publishers and for distribution to the Executive Committee of The Club of Rome. As Mr. Watts promised in New York, we will insure that copies of the manuscript in final edited form will be available to you and to foreign publishers for completion of translations by the end of December. We will be happy to send these copies by international airmail directly to the publishers concerned if you wish us to do so, and provide us with the necessary addresses.

I also wish to confirm that we will supply you 100 xerox copies of the final galley proofs of the book within the month of January, for your further distribution to the members of The Club of Rome. We expect that these galley proofs will not be available until the end of January, but we will get them to you as soon as possible.

Although these copies will include xerox reproductions of all graphic materials included in the text, I should point out that those foreign publishers wishing to use our graphics will not be able to proceed with their own editions until they receive the photographic negatives made from the offset plates of the

We are sending these separately; see

charts and graphs. These are produced for insertion in the text by the printer as one of the final steps of book production; we now anticipate that the offset plates will be ready in the first week of February. We will make every effort to supply duplicate offset negatives to interested foreign publishers -- at an appropriate fee to help defray our costs -- immediately thereafter.

3. International Distribution. As you agreed with Mr. Watts, Potomac Associates will supply you a list of all individuals outside the United States to whom we plan to send a free copy of The Limits to Growth, as well as the proposed text of our cover letter. We will be happy to have The Club of Rome handle basic distribution of free copies in Canada and the United Kingdom, as you suggested in New York.

4. Bulk Purchase. We have informed Universe Books that The Club of Rome will wish to purchase 3,000 copies of the English language edition of the book, in addition to the guaranteed purchase by Potomac Associates of 5,000 copies for our own distribution. Universe is completing its analysis of production costs, and will let us know the unit price for this bulk purchase in the very near future. That price, however, will not vary materially from the estimate of \$1.00 per copy that we have given you in the past. Universe Books can easily separate a designated number of those copies you purchase for direct mailing to a Canadian address, if you wish, while shipping the remainder to an address of your choice in Europe.

5. Foreword. Taking into account your comments to Mr. Watts in New York, and suggestions from Dennis and Dana Meadows, we have made some revisions and corrections in the foreword to the book. A copy of the revised text is enclosed. We will be grateful for any further reactions you or other Executive Committee members may have.

6. Related Works. You mentioned to Mr. Watts that a related book dealing more specifically with environmental issues is planned for publication near the time of the Stockholm Conference next summer. Among others, Barbara Ward (Lady Jackson) is participating in this effort. Have arrangements been made for a British publisher of this environmental book? If our negotiations with Penguin on Limits do not work out, we might wish to contact the UK firm that plans to do the later work.

Also, do you know whether arrangements have been made for publication of this later book in the United States? While we can make no advance commitment, we would be highly interested in seeing the manuscript if it has not already

been promised to another US publisher. As Mr. Watts suggested, we will of course look forward to discussing with you other future publications that may grow out of the Project on the Predicament of Mankind as well.

I hope that you will let us know if you expect to be in the United States again in coming weeks, since it is useful for all concerned to take advantage of your trips to review the status of the book. We will not hesitate to get in touch in the meantime, of course, if we have any urgent questions or requests.

Mr. Watts joins me in sending you very best regards.

Sincerely,

A handwritten signature in cursive script, appearing to read "Donald R. Lesh". The signature is written in dark ink and is positioned above the typed name.

Donald R. Lesh
Vice President

Enclosures



E40-214
Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

Annex 2

December 6, 1971

Dr. Aurelio Peccei
Amministratore Delegato
Italconsult
Via Giorgione 163
00147 Rome
Italy

Aurelio,

Let me here summarize my understanding of the conditions which will govern the distribution of all foreign language editions of the manuscript The Limits to Growth by Dana and myself.

- 1) Potomac Associates has been assigned all rights to any English language version of the manuscript whether published and distributed here or abroad.
- 2) I assign all rights to all foreign language editions of the manuscript to you as an agent of the Club of Rome under the following conditions:
 - a. One copy of the English manuscript will be supplied by Potomac to any foreign publisher you designate. That copy will be used only for purposes of preparing the foreign language version of the manuscript and must not be distributed to people other than those involved in the preparation of the foreign language version.
 - b. The charts, tables, and figures prepared by Potomac will be made available to any foreign publisher for use in his foreign language edition upon payment to Potomac of an agreed upon share of Potomac's design costs.
 - c. Eduard Pestel must agree with all aspects of any arrangements to be made to publish a German version of the manuscript.
 - d. I receive 50 percent of the gross amount of any payment made to you or to the Club of Rome for any rights to use of the manuscript or from any royalties derived from its sale. This does not apply to payments made in the form of books which are distributed free of charge by the Club of Rome. Payment should be made in December of any year in which any such payments may be received by the Club of

Peccei
December 6, 1971

page 2.

Rome from the publication of the manuscript.

- e. Upon receipt of a request in writing from you Potomac Associates will send one copy of the published English version of the manuscript to any legitimate reviewer. That reviewer must respect the release date specified by Potomac.
- f. I receive five free copies of each version authorized by the Club of Rome.
- g. No copies of the English version will be distributed to individuals until after the Potomac release date except with the permission of Potomac.

*only 4 of
none
received*

My concerns are three. First, maximize the political advantage which the Club may gain for its program through release of Limits. Second, protect Potomac's substantial investment in the English version. Third, compensate Dana if possible for the seven months during which she worked on the Club of Rome project without any salary. I hope you can agree that the above conditions serve those goals. If you agree with this summary of our agreement, please sign one copy of this letter and return it to me.

Cordially,



Dennis L. Meadows

DLM:jm

Approved: _____

Date: _____

BONA FIDE AGREEMENT

between

= THE CLUB OF ROME (here called 'COR')

and

= Professor DENNIS L. MEADOWS (here called 'Author')

1 - With reference to ~~point~~ the Contract established on between COR and The Massachusetts Institute of Technology (MIT), COR hereby agrees:

= that, in view of the present world situation and the interest and publicity arisen by and around the Draft Report circulated during the last months for comment only, the book mentioned in point... of above Contract be published by Author even before the presentation by MIT to COR and approval by COR of the results and documentation (including a Technical Report) of the research project contemplated in that Contract;

* = that Author associate in the book's authorship Dana, Bohrens and J. J. J. J. (the group being called here 'Authors');

②
= that the book be called 'The Limits to Growth: a Report for The Club of Rome's Project on the Predicament of Mankind', and be brought ~~about~~ in the English language editions, under the aegis of Potomac Associates Inc. of Washington (PA)

- 2- COR takes note that all rights to the English language editions have been assigned to PA by direct agreement between authors and PA, without cost, obligation or benefit for COR.
- 3- Authors hereby assign all rights to all Foreign language editions to COR and, in view of the public service motivation of this publication, agree to receive from COR in payment for any cost or right a symbolic sum only, in the amount of one dollar.
- 4- Responsibility for the book contents rests with Authors - It is also their responsibility to secure at no cost or

obligation for COR all permits and consents which may be necessary from third parties, including MIT, concerning the book publication and distribution.

5- It is the responsibility of COR to make all arrangements with PA for coordination of the English and Foreign languages editions.

→ Publication of this book does not preempt Authors' rights to publish, individually or collectively, other books or papers on the research made by MIT for COR, at any time after COR approval of ^{the} Technical Report - Before that date, prior approval must be secured from COR.

6- COR will send Authors five free copies of each Foreign language edition it authorizes.

Cambridge.....

.....
(Aurelio Pececi for COR)

.....
(Dennis L. Meadows in the name and for the account also of other Authors)

Annex 3
9-10 December 1971
in flight from NY to BR.

Note for Dennis

I enclose Draft of what I consider the proper document to be exchanged between us at this stage, after our telephone conversation of yesterday (Dec. 8) afternoon. I think that, as it is, it has many points of merit. As I have not with me the COR-MIT Contract, please fill the blanks in accordance with it

I have to add only two remarks:

- 1- About the Title: it cannot be 'a Report of COR', because this would have entailed approval of the text by COR (which has not taken place). It is a Report by the Authors (and I have to remind you that to my disconcert you wanted to change its character only a few weeks ago from its previous one of 'a Report to COR' to a document of your own, which has meanwhile had further evolutions passing through a phase in which you

6

wished to present it as a 'Dennis-Dana',
or better 'Dana-Dennis' one, to a final
incarnation as a 'four-some' effort, as
I learned last night and we agreed
* that should not be changed again: and
it cannot be either 'a Report to CoR,
because we would have made ~~again~~
full circle again, coming back to
the first version (the departure
from which I had some pain to
explain to my ExCom colleagues),
which occurrence would require
at least their reading the final
text before publication.

Therefore I suggest the formula
of 'a Report for CoR's Project....'
as indicated in the Bone Fide
Agreement enclosed - I am sorry I
did not notice this point when
Mr. Watts handed me over some
copies of the manuscript. Though
not a linguist, I believe that
this formula (a) is correct, (b)

is widely used, and (c) represent the reality of the relationships involved.

2. About the Timing: as time is even more of essence (I mean specifically) in clarifying and defining these simple but necessary agreements, and as you told me that next week (starting Monday 13?) you will be in Venice, I ask you or Dana kindly:

- = to send me to Rome your revised text of this Draft Agreement very urgently (I hope ^{that} a couple of days after receiving this letter will be enough)
- = to cable me in meantime if you are in accord or not, and if not what are your suggestions. My address:
- = till Monday 13, FIATMOTOR BUENOS AIRES, tel. 346.5377
- = Tuesday 14, FIATMOTOR RIO DE JANEIRO, tel 479.617
- = Wednesday 15, ROME (usual address)
- = Thursday 16, TORINO (c/o FIAT, tel. 6565)
- = Friday 17, BRUSSELS (but this date is

(a)

already too late for you to call or phone me, because ^{some} ~~the~~ Foreign Language publishers have already lost patience for our continuous delays)

As you mentioned that you have spoken with Carroll, I am sending copy of this Note and the enclosure to him.

On second thought, I think I must send copy of everything also to Mr. Watts (and hope you do not mind) because all things are so interrelated and we are bound by the same moral interests and ^{the} desire to simplify and make effective all steps to bring out this message well and quick. To Mr. Watts inter alia, as I told you over the phone, I also asked to kindly send me the complete (and clear) formula publishers want to include in the back of the first or second page after the

(e)
jacket to state whose rights are
those of the original versions and how
they (the publishers) are now entitled
to put out the book in their language

Hope now everything will be quickly
in order, so that each of us can
think to something else -

Love to Dana -

Cordially
Aurilio

1 Annex

copy to Carroll
to Mr. Walsh

BONA FIDE AGREEMENT

between

- THE CLUB OF ROME (here called 'COR')

and

- Professor DENNIS L. MEADOWS (here called 'Author')

1 - With reference to the Contract established on November 16, 1970, between COR and The Massachusetts Institute of Technology (MIT), the above hereby agree:

- that, in view of the present world situation and the interest and publicity arisen by and around the Draft Report circulated during the last months for comment only, the book mentioned in point 7 of above Contract be published by Author even before the presentation by MIT to COR of the results and documentation (including a Technical Report) of the research project contemplated in that Contract;

- that Author associate in the book's authorship Donella H. Meadows, William W. Behrens III, and Jørgen Randers (the group being called here 'Authors');

- that the book be called 'The Limits to Growth: a Report for The Club of Rome's Project on the Predicament of Mankind; and be brought out in the English language editions under the aegis of Potomac Associates, Inc. of Washington (PA).

2 - COR takes note that all rights to the English language editions have been assigned to PA by direct agreement between authors and PA, without cost, obligation or benefit for COR.

3 - Authors hereby assign all rights to all Foreign language editions to COR and, in view of the public service motivation of this publication, agree to receive from COR in payment for any cost or right symbolic sum only, in the amount of one dollar.

4 - Responsibility for the book contents rests with Authors. It is also their responsibility to secure at no cost or obligation for COR all permits and consents which may be necessary from third parties, including MIT, concerning the book publication and distribution.

5 - It is the responsibility of COR to make all arrangements by mutual agreement with PA for coordination of the English and Foreign languages editions.

6 - COR will send Authors five free copies of each Foreign language edition it authorized.

7 - Publication of this book does not preempt Authors' rights to publish, individually or collectively, other books or papers on the research

made by MIT for COR, at any time after submission of the Technical Report to the Club of Rome. Before that date, prior approval must be secured from COR.

Cambridge

December 27, 1971 Aurelio Peccei

(Aurelio Peccei for COR)

12/20/71 Dennis L. Meadows

(Dennis L. Meadows in the name and for the account also of the other Authors)



E40-214
Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

December 20, 1971

Dr. Aurelio Peccei
Amministratore Delegato
Italconsult
Via Giorgione 163
00147 Rome
Italy

Dear Aurelio,

Enclosed are two copies of the contract which you sent for my signature. Please sign one and return it for our records. You seem to be very worried about the appearance of other publications before the technical report is finally submitted. Let me remind you that Limits to Growth is the direct response to your request in April for a document which might be available for political use by The Club of Rome before the technical research was completed. No other major work is contemplated until after the technical document is finished and submitted to COR. I discussed the technical report with Eduard and we agreed that the preliminary draft will be sent to him at the end of February. He will visit MIT for a week in mid-March when we will identify the details to be included before final submission.

I intend to prepare a book on the basis of the technical report. There may also be a book of the collected sub-studies completed by our group over this past 18 months, and we also envision a book on resource depletion. None of those can realistically be ready for publishing before late 1972 or early 1973.

We have assumed commitments to deliver several more papers at conferences on topics of relevance to the World Project, but I assume you are not objecting to that activity. However, while I am unsure of your precise intention I have left that article in the contract.

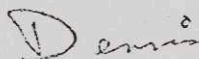
The idea of formally approving the technical report has never before arisen either in my conversations with any member of the Club of Rome or in the initial contract. I have expressed intense interest in helping Eduard to satisfy the obligations he incurred to the Volkswagen Foundation in obtaining our money. Thus we will work very hard with him during March to alter the document so that he is pleased with it. Also, it has seemed ethically important not to distribute any major document bearing The Club of Rome's name without obtaining its preliminary approval. It was that objective which led us to submit the preliminary draft of Limits to Growth to the executive committee.

However, to insist that The Club of Rome approve our technical report seems inconsistent with its nature. It is a scientific document and I must bear ultimate responsibility for its final form. Indeed, as you discovered in your attempts to obtain approval by your associates, it probably is impossible to get full approval from The Club of Rome of any document. Thus, I will not abridge our publication rights after completion of the project by making them contingent on approval by The Club of Rome.

Dana has worked very hard to give you a document which will be a useful and worthy instrument in furthering the objectives of The Club of Rome. I hope events ultimately prove that she was successful. With the completion of Limits, my entire group turns its attention to preparation of the scientific documents which will provide other groups with the information necessary to extend and test our work. That is something which will engage us fully for many years. While the scientific documents produced in the course of those efforts and as a result of our work this past year, are unlikely to be of direct use in your program of political change, they should help to foster the technical expertise abroad which will be necessary in each country to successfully engage these problems.

Although the enclosed contract differs in many important ways from any past agreements between MIT academic staff and outside sponsors of academic research, I signed it gladly in hopes that it will eliminate the misapprehensions you hold about our objectives. I do hope this will now clear the way for you to proceed on whatever paths you have selected.

Cordially,



Dennis Meadows

DLM:cs

Enclosure.

Annex 5

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29/12 11.21

61000 ACTX3 *(

61497 TECNITAL

TELEGRAMMA ORDINARIO

DENNIS MEADOWS MIT 50 MEMORIAL DRIVE CAMBRIDGE MASSACHUSETTS USA

IN PARTENZA

29.12.1971

AM INFORMED NOW FROM HOLLAND THAT MR VAN DIEREN
OF MILIEU DEFENSE COUNCIL HAS RECEIVED APPARENTLY
FROM YOU FULL BOOK TEXT AND PREPARES TO PUBLISH
PART OR TOTALITY IN DUTCH IN EARLY JANUARY STOP AM
SURE THIS NEWS IS INCORRECT BUT ASK YOU TO CABLE ME FULL
ASSURANCE AND TAKE WHATEVER MEASURES ARE NECESSARY TO AVOID
THIS INFRINGEMENT OF CONTRACT AND CONSEQUENT LAWSUITS BY
PUBLISHER SPECTRUM TO WHOM WE HAVE TRANSFERRED DUTCH
LANGUAGE RIGHTS STOP BEYOND LEGAL ASPECTS SAME
CORRECTNESS WHICH GUIDES US VISAVIS POTOMAC FOR ENGLISH
EDITION SHOULD INSPIRE ALL CONCERNED IN AVOIDING TEXT
LEAKAGES OR DISCLOSURE BEFORE PUBLICATION IN FOREIGN
LANGUAGES STOP ANXIOUSLY EXPECTING YOUR REPLY CORDIALLY

AURELIO PECCEI

*

61000 ACTX3 *(

61497 TECNITAL

0025

CoR

Copy for Prof. Wilson

DEC 9 1971

ExCom Meeting

October 4, 1971

Paris

TENTATIVE AGENDA

Also for December 5¹⁹⁷¹
Meeting in Geneva

1. Situation

2. MIT Report and ExCom Presentation

a. Publication and Diffusion in USA

- = Potomac Associates Proposal → December 9 meeting in NY
- Conditions
- Time Schedule
- Diffusion by PA in USA
- Ditto by CoR?
- Sales rights to Universe Books
(for USA --and other English-speaking countries?)

b. Translation and Diffusion by CoR in other countries

- = Other English-speaking areas
- = Italian
 - Mondadori's 'Scienza e Tecnica'
 - Other
- = French
 - Fayard (Delaunay's book)
- = Spanish (Latin America) → to be made in Mexico
 - Mimeo?
- = Portuguese (Brasil)
 - Mimeo?
- = Japanese
- = German
- = Other. →
 - Dutch: Spectrum
 - Serbo-Croat
 - Russian

- c. Transmission letter(s) by CoR
 - = Whenever necessary
- d. Information to CoR members
 - = Letter to communicate them both texts and distribution plan
 - = Their participation in diffusion

3. Follow-up action after Report and Presentation distribution (overlapping Phases One and Two)

Note: This will be a matter for continual review by ExCom. See Carroll's Nov. 7 letter

- a. In Canada
 - = Institute for Research on Public Policy
 - = by CoR directly
- b. In USA
 - = Washington
 - = Elsewhere
- c. In Latin America
 - = Follow-up to Rio meeting
- d. In Sweden
- e. In Austria
 - = Invitation by new Chancellor
- f. In Switzerland
- g. In the Netherlands
 - = already initiated
 - = further developments

- h. In Germany (also in conjunction with VW)
 - = Report by Eduard
- i. In Italy *→ e.g. UDDA Conference in Rome
Feb. 17-19, 1972*
 - = Report by Aurelio
- j. In France
- k. In the UK
- l. In Japan
 - = Report by Okita
- m. In Jugoslavia
- n. In Eastern Europe
- o. In USSR
- p. In India
- q. In Africa
- r. In other countries
- s. In conjunction with International Organizations
 - = UN *→ Jan (?) in N.Y.*
 - = OECD
 - = WHO
 - = UNESCO
 - = FAO *→ Jan 18 in Rome*
 - = UNIDO
 - = UN Stockholm 1972 Conference on Man and his Environment

- = UNITAR
 - Commission on the Future
- = EEC
- = Other.
- t. In conjunction with other organizations or institutions
 - = The Conference Board
 - = Atlantic Institute
 - = 3rd World Future Research Conference 1972, Romania
 - = International Social Sciences Centre 1972 Conference in Eastern Europe
 - = World Council of Churches (and other religious bodies)
- u. In conjunction with many other (private) bodies
 - = such as those listed in May 9-10 Geneva ExCom meeting agenda.
- v. In conjunction with Foundations
 - = Volkswagen (follow-up)
 - = Ford *J. Stratton (retiring Ch): very interested*
 - = Rockefeller
 - = Agnelli
 - = Thyssen
 - = Duttweiler
 - = Other.
- w. In conjunction with private industries
 - = IBM
 - = Other
- xi. TV, press & books
 - = NOS - ORTF - CBS - ABC (Australia)
 - = Other

4. Phase Two Blueprint

a. Status of Preparations (see also 3. above)

- = MIT
- = Battelle
- = Japan
- = Other

b. Financing

5. Financial matters

a. Use of DM200,000 VW Grant Balance

- = Still in VW hands: DM14,617.52
- = A/c 51. N with UBS, Geneva: DM2,199.75
- = With MIT (uncommitted on May 30, 1971): \$7,208

b. Use of DM775,000 VW Grant Balance

- = With MIT (uncommitted in June 1971): approx. \$70,000 (out of VW remittance to MIT of DM720,000)
- = A/c 52. X with UBS Geneva: DM54,998.65, totally available.

Note: Presentations have been made through Eduard Pestel to VW for the use of all balances available.

c. Balance available of Italian contribution

- = A/c 30. Z with UBS Geneva: Sw. Fr. 26,194.10.
- = In Italy: approx. \$55,000.

d. Italian/Argentine contribution for preparatory phase of Latin American study

- = Already spent or engaged: \$20,000
- = Balance still required: unknown

To be arranged
thru Eduard

e. Japanese contribution

f. Other

6. CoR membership

a. As of June 30, 1971

+ Louis Armand

+ Jacques Spaey

b. Offers of resignation

= Bodil Begtrup - withdrawn

= Paul Weiss - confirmed

c. New members

= In the Netherlands = in US

= In the UK = in Israel

= In Latin America = in Arab Countries

= In Asia = In Japan

= In Africa

= In Eastern Europe

7. ExCom

a. Membership

= For Africa

= For Latin America

b. Secretary

= Arrangements with Jane King (part-time)

8. Other

December 1971

Ecocide in Indochina

by

Paul R. Ehrlich, Stanford University

and

John P. Holdren, California Institute of Technology
(on leave from Lawrence Livermore Laboratory)

(This paper is a version of one prepared
for The Saturday Review and is copyright
1971 by that publication.)

Unhappily, the practice of genocide has a long history in human affairs. Ecocide, the deliberate destruction of ecosystems, is for practical reasons a rather recent development. Destruction of enemy crops has frequently occurred in warfare, and the near extermination of the bison was a decisive factor in America's conquest of the Plains Indians. But until recently man has not been able to destroy the entire life-support system over large areas in a short space of time. However, synthetic herbicides, insecticides, bulldozers, and nuclear weapons now give humanity a greatly enhanced capability to commit ecocide-- a capability that has been extensively exploited in Indochina by the armed forces of the United States.

As of late 1969, more than 5 million acres of Indochina, 12 per cent of South Vietnam, had been treated with "defoliants," applied at an average of thirteen times the dose recommended by the U.S. Department of Agriculture (USDA) for domestic use. Most of the spraying was done in forests in an unsuccessful attempt to "expose" the enemy and secure the area. At such dosages some trees, especially mangroves, may be killed -- not just defoliated -- by a single application. Multiple applications kill other kinds of trees. The American Association for the Advancement of Science-Herbicide Assessment Commission (AAAS-HAC) reported that perhaps half of the trees in the mature hardwood forests north and west of Saigon were damaged.

One of the herbicides widely used in Vietnam is Picloram, which is both potent and (like DDT) persistent. It is so dangerous that the USDA has not licensed it for use in the cultivation of any American crop. Some chemists say it may continue to kill plants in southeast Asia for decades after the last GI has left.

Through 1969 at least 500,000 acres of cropland in South Vietnam had been sprayed with herbicides. The stated purpose was to deny food to enemy soldiers. Actually, the spraying starved civilian populations sympathetic to the National Liberation Front and forced people to move from the countryside into cities where they could be more readily controlled. As our military men are well aware, the first to suffer when food becomes scarce in wartime are not soldiers but children, old people, and pregnant and nursing women. The AAAS-HAC reported that virtually all of the crops destroyed would have supplied food to civilians, especially to the Montagnard tribesmen of the central highlands.

The overall effect of these herbicide programs is to degrade Vietnamese ecosystems. Forests attacked with herbicides have been invaded by bamboo, and some areas may have undergone laterization. The danger of laterization is especially severe in farmland attacked with herbicides. According to the AAAS-HAC, large areas of mangrove forests, which grow along waterways and play a critical role in the maintenance of economically important fisheries, have also been destroyed. Some 1,400 square kilometers, 20-50 per cent of all the mangroves in South Vietnam, have been killed and show no signs of regeneration. In addition to immense ecological damage, herbicides may leave the Vietnamese people with a legacy of birth defects, for evidence is now accumulating that some of the herbicides are teratogenic.

At last, due in large part to the AAAS-HAC report and other pressure from the scientific community, the use of herbicides as a military weapon in Vietnam apparently has been discontinued. Unfortunately, herbicides have not been our only ecocidal weapon. In 1967-68 alone, more than 3.5 million 500-750-pound bombs were dropped on Vietnam, each creating a crater as large as forty-five feet across and thirty feet deep. These craters occupy 100,000 acres. We do not know the exact bombing statistics since 1968 in Vietnam, or the tonnage dropped in Laos and Cambodia, since the Department of Defense has refused to release the exact statistics. Ecologist E.W. Pfeiffer of the University of Montana has estimated that 325,000 acres, mostly in South Vietnam, are now in craters. From the World War II bomb craters in New Guinea and the Solomon Islands, it has been calculated that natural recovery of cratered areas may take a century.

In many areas of Vietnam peasants are afraid to reoccupy bombed fields because of the danger from unexploded ordnance. This problem will worsen if bombing is substituted for both defoliation and ground combat troops. Another ecocidal device now being used with increased frequency, according to Pfeiffer, is the BLU-82B multipurpose bomb, the so-called "daisy-cutter." This 15,000-pound concussion weapon clears an area the size of a football field to make an instant landing zone for helicopters. It can kill all animals and people within a three-quarter-mile radius (i.e., over an area of some 1,110 acres). Daisy-cutters were being dropped at a rate of two or three per week in mid-1971.

Perhaps the crudest tool the United States is using to destroy the ecology of Indochina is the "Rome plow." This is a heavily armored D7E caterpillar bulldozer with a 2.5-ton blade. The Rome plow can cut a swath through the heaviest forest. It has been used to clear several hundred yards on each side of all main roads in South Vietnam. In mid-1971 five land-clearing companies were at work, each with some thirty plows, mowing down Vietnamese forests. By then some 800,000 acres had been cleared, and the clearing was continuing at a rate of about 2,000 acres (three square miles) daily.

Ecocide in Indochina has not been limited to Vietnam. A clandestine raid in April 1969 defoliated 173,000 acres in eastern Cambodia and damaged about one-third of the rubber trees then in production. In addition to this serious blow to the rubber crop (which is the backbone of that nation's economy), damage to local food production was severe. The raid was flown by Air America, an airline run by the U.S. Central Intelligence Agency.

Although ecocide itself is not formally a war crime, it has contributed greatly to wanton destruction and devastation, which are both war crimes and crimes against humanity under the Charter of the International Military Tribunal at Nuremberg. The use of herbicides (and tear gases) is against the Geneva

Protocol of 1925 as interpreted in 1969 by a 58-to-3 vote (with thirty-five abstentions) of the main political committee of the U.N. General Assembly. The only nations to vote "no" with the United States were Australia, which has allied itself with us in Vietnam, and Portugal.

A large part of the American scientific community must carry a heavy burden of guilt for its failure to develop effective opposition to inhumane and possibly criminal acts by the American government. Our community developed the weapons, has the expertise to evaluate their impact, and through the lobbying effort that eventually forced the military to stop using herbicides showed that science can have a positive effect in political decision-making when it bestirs itself.

DEC 6 1971

December 2, 1971

Professor Carroll Wilson
c/o Cosmos Club
2121 Massachusetts Avenue, N.W.
Washington, D.C. 20006

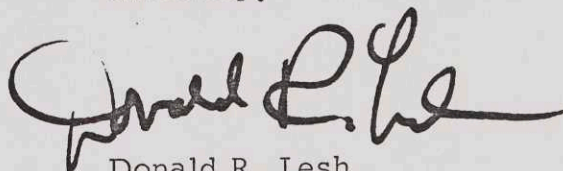
Dear Professor Wilson:

As a result of the cables both Dennis Meadows and I sent earlier this week to Aurelio Peccei, he telephoned me this morning from Rome to discuss plans for his brief visit to the United States on December 8-9.

Our expectation now, subject to confirmation with Dr. Peccei, is that William Watts, who is President of Potomac Associates, will go to New York on December 9 to meet with Peccei at the headquarters of the Olivetti Corporation, while I am meeting here in Washington with Dana Meadows to review the status of the manuscript. I have talked this over with Dennis Meadows, and he is in full agreement.

Best regards.

Sincerely,

A handwritten signature in dark ink, appearing to read "Donald R. Lesh". The signature is fluid and cursive, with a large initial "D" and "L".

Donald R. Lesh
Vice President

November 30, 1971

Professor Carroll Wilson
c/o Cosmos Club
2121 Massachusetts Avenue, N.W.
Washington, D.C. 20008

Dear Professor Wilson:

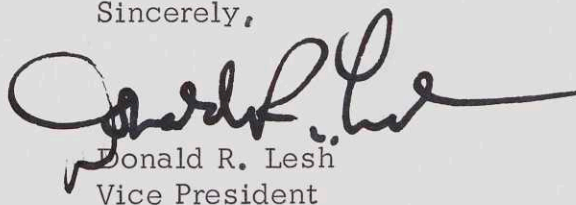
I am enclosing a copy of my letter of November 29 to Aurelio Peccei and our Potomac Associates proposal for the foreword to The Limits to Growth. Of course we would be very grateful for any comments or criticisms you may have.

As you requested, I also am sending you a copy of the cable I sent to Aurelio Peccei this evening, suggesting that we meet for a general discussion of the status of the book in Washington on Thursday, December 9. That is the day that Dana Meadows also will plan to be here.

I very much appreciate your calling to alert me to Peccei's plans, and I hope the meeting works out. We are all very pleased with the progress of the book, incidentally.

Best regards.

Sincerely,



Donald R. Lesh
Vice President

Enclosures

November 30, 1971

ROMCLUB
ROME, ITALY

ATTENTION DR. AURELIO PECCEI

Understand you arriving US December 8. Since Dana Meadows will
be in Washington December 9 could we meet here the 9th for discussion
book status? Please confirm whether convenient.

Best regards.

DONALD R. LESH

November 29, 1971

Dr. Aurelio Peccei
Club of Rome
Via Giorgione 163
00147 Rome, ITALY

Dear Dr. Peccei:

By now I trust that my letter of November 23 has reached you, and has removed any possible doubt about my understanding of the terms of the agreement we reached in our conversation in New York. At that time I promised that we would send you both our revision of the foreword to The Limits to Growth and our comments and criticisms of the Club of Rome afterword. There was an unavoidable delay in the process, as I explained in my earlier letter, but the drafts of both the foreword and afterword are now in your hands.

We are very pleased, incidentally, with the way the book is taking shape, and I feel certain that in final form it will be a document in which we all will take great pride. We are now continuing the editing of the revisions of chapters three and four of the manuscript, and I understand from Dennis Meadows that the fifth and final chapter will be sent to us very soon.

In our draft of the foreword we have tried to eliminate any elements that we criticized in the earlier version, or that we felt were adequately covered in either the M.I.T. introduction or the Club of Rome afterword. The result, as you see, is quite short -- but we believe that is an advantage. I am sure that I need not add that we very much welcome your suggestions or criticisms on this draft. In particular, we feel that the opening would be strengthened by citing the specific number of individuals who attended the initial meeting of the Club of Rome in 1968, and, if possible, the variety of nationalities they represented. Could you supply us those details? Finally, I should note that the names of all members of the M.I.T. research team were included with the approval of Dennis Meadows.

On a different but related topic, I wonder whether you have been able to arrive at a firm estimate of the number of copies of the book that the Club of

Rome will wish to purchase for its own distribution. We are working out the terms of our arrangement with Universe Books, and that information would be extremely useful for planning purposes. We have not yet agreed with Universe on the sale price of the book, but we expect that it will be in the range from \$1.95 to \$2.35. That would mean that the unit cost of your bulk purchases, along with ours, would be roughly half that amount. We still intend to buy approximately 5,000 copies for the distribution program we outlined to you on your visit to Washington. If the Club of Rome plans to purchase several thousand copies for its own use, we could realize economies of scale by confirming both your order and ours in advance. Universe Books also would be interested in knowing for planning purposes whether you will want the Club of Rome copies shipped to Italy, or whether you intend to use some other central distribution point.

Very best regards.

Sincerely,

Donald R. Lesh
Vice President

Enclosure

cc: Alexander King
bcc: Dennis Meadows

FOREWORD

The Club of Rome

In April, 1968, a small group of individuals -- scientists, educators, economists, humanists, businessmen, and national and international civil servants -- from a variety of countries gathered in the Accademia dei Lincei in Rome. They met at the instigation of Dr. Aurelio Peccei, an Italian businessman, economist, and man of vision, to discuss a subject of staggering scope -- the present and future predicament of man.

Out of this meeting grew the Club of Rome, an informal organization that has been aptly described as an "invisible college." Its purpose is to foster understanding of the varied but interrelated components -- economic, political, natural, and social -- that make up the global system in which we all live, and to bring that new understanding to the attention of policy-makers and the public, worldwide.

The Club of Rome remains an informal international association, with a membership that has grown to approximately 60 over the past three years. None of its members holds public office, nor does the group seek to express any single ideological, political, or national point of view. All are united, however, by their overriding conviction that the major problems facing mankind are of such complexity and are so interrelated that traditional institutions and policies are no longer able to cope with them, nor even to come to grips with their full implications.

The members of the Club of Rome have backgrounds as varied as their nationalities. Dr. Peccei, the founder and still the prime moving force within the group, is affiliated with Fiat and Olivetti and manages his own research and development organization, Italconsult. Other leaders of the Club of Rome include: Hugo Thiemann, head of the Battelle Institute in Geneva; Alexander King, scientific director of the Organization for Economic Cooperation and Development; Saburo Okita, head of the Economic Research Institute in Tokyo; Eduard Pestel of the Technical University of Hannover, Germany; and Carroll Wilson of the Massachusetts Institute of Technology. Although membership in the Club of Rome is limited, it is being expanded to include representatives of an ever greater variety of cultures, nationalities, and value systems.

The Project on the Predicament of Mankind

In the summer of 1970, the Club of Rome met in Bern, Switzerland and Cambridge, Massachusetts to initiate an ambitious undertaking -- the Project on the Predicament of Mankind.

The intent of the project is to examine the complex of problems troubling men of all nations. We are everywhere confronted with poverty in the midst of plenty; degradation of our environment; loss of faith in institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; rejection of traditional values; and inflation and other monetary and economic disruptions. These seemingly divergent parts of the "problematique," as the Club of Rome

calls it, have three characteristics in common: they occur to some degree in all societies; they contain technical, social, economic, and political elements; and, most important of all, they interact.

It is the predicament of mankind that man can perceive the problematique, yet, despite his considerable knowledge and skills, he does not understand the origins, significance, and interrelationships of its many components and thus is unable to devise effective responses. This failure occurs in large part because we continue to examine single items in the problematique without understanding that the whole is more than its parts, that change in one element means change in the others.

Phase I of the Project on the Predicament of Mankind has now been completed. The Limits to Growth is the first account of the findings published for general readership.

The book consists of an examination of five basic factors that determine, and therefore ultimately limit, growth on this planet -- population, agricultural production, natural resources, industrial production, and pollution. The study was conducted through the System Dynamics Group at the Massachusetts Institute of Technology under the direction of Dennis L. Meadows, with financial support from the Volkswagen Foundation. Working with Dr. Meadows was an international team that included Donella H. Meadows (USA); Ilyas Bayar (Turkey);

William W. Behrens, III (USA); Farhad Hakimzadeh (Iran); Peter M. Milling (Germany); Jørgen Randers (Norway); Erich K. O. Zahn (Germany).

Phase II of the project, also under the direction of Dr. Meadows, is expected to get under way in the fall of 1972. It will be devoted to systematic analyses of each of the five major growth-limiting factors identified in the first phase.

A Global Challenge

It is with enormous pride and pleasure that Potomac Associates joins with the Club of Rome and the MIT research team in the publication of The Limits to Growth.

We, like the Club of Rome, are a young organization, and we believe the Club's goals are very close to our own. Our purpose is to bring new ideas, new analyses, and new approaches to persistent problems -- both national and international -- to the attention of all those who care about and help determine the quality and direction of our life. We are delighted therefore to be able to make this bold and impressive work available through our book program.

We hope that The Limits to Growth will command critical attention and debate in all societies. We hope that it will encourage each reader to think through the consequences of continuing to equate growth with progress. And we hope that it will lead thoughtful men and women in all fields of endeavor to consider the need for concerted action now if we are to preserve the habitability of this planet for ourselves and our children.

William Watts
President, Potomac Associates

NOV 29 1971



E40-214

Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

MEMORANDUM

TO: Steering Committee--Jay W. Forrester, John Collins, Gordon S. Brown,
Carroll Wilson, Louis Alfeld, John A. Seeger, Frank Davidson

FROM: Dennis L. Meadows

DATE: November 26, 1971

SUBJECT: Closing out the Club of Rome Account

The Club of Rome account will soon be exhausted. It would be appropriate for us now to plan the allocation of the expenditures so as to maximize the probability of an orderly continuation of the program.

Total funds remaining unexpended at the end of October were \$40,200. Salary and wage expenses during the month of October were \$4415 . Of this amount, \$1708 was expended on research personnel [Behrens, Anderson] and \$2707 was expended on overhead personnel [Erwin, Seeger, Grayson, McNulty, Machen, Bender].

No significant contract currently being negotiated by my group is likely to produce funds before June. Thus, I propose the following schedule charges against 72890. This leaves our group with only one secretary and with no resources to pay Laird, Randers or Naill. It does, however, leave a fair probability of having at least a few people left if the NSF natural resources grant does come through early next summer.

DLM: jm

Spatus

BUDGET WORKSHEET

DATE: 11/1/74
 WORKED BY: SEC

PRINCIPAL INVESTIGATOR: D. Meadows EXT. _____
 SOURCE OF FUNDS: Clue of Roe
 CONTRACT LENGTH (MONTHS): 8 STARTING 11/1/74

ACCOUNT NO. 72890
 CAPITALIZATION FOR THIS BUDGET PERIOD \$ 40,200

SALARIES & WAGES DETAIL	NAME	RANK	MO.	RT.	YEAR															
					MONTH		Nov	Dec	Jan	Feb	Mar	Apr	May	June						
					1	2	1	2	1	2	1	2	1	2	1	2	1		2	1	2	1	2
	J. ANDERSON	OTHER ACD 5701F	833		← 100% →													5,830		
	R. ERWIN	"	1,400		← 50% →															2,100
	J. SEEGER	"	1,540		← 33% →															1,540
	W. BEARENZ	DSR STAFF	875		← 100% →													7,000		
	J. GERBSON	"	1,067		← 50% →															1,605
	M. McNULTY	Sec	500		← 100% →															1,500
	J. MACHEN	"	500		← 100% →													4,000		
	M. BENDER		-																	100
	DANA MEADOWS	ALL	APR-JUNE																	(2,750)

TIME INDEPENDENT BUDGET ITEMS

TRAVEL \$ 1,200
 PUBLICATIONS _____
 MAJOR EQUIPMENT _____

TOTAL T.I.E. ITEMS \$ 1,200

OTHER BUDGET ITEMS

CRYOGENICS \$ _____
 COMMUNICATIONS _____
 COMPUTER USE TYPE _____ HRS. 9,500
1175 2000

TOTAL OTHER ITEMS \$ 4,500

TOTAL SALARIES & WAGES \$ 20,925

OVERHEAD AT 63 % 11,090

* BENEFITS AT 16 % 3,350

TOTAL FIXED COSTS \$ 35,365

TOTAL T.I.E. ITEMS 1,200

TOTAL OTHER ITEMS 4,500

TOTAL BUDGETED ITEMS \$ 41,065

BUDGET CAPITALIZATION \$ _____

TOTAL BUDGETED ITEMS - _____

(MISC) MATERIALS & SERVICES

NOV 29 1971

November 24, 1971

Mr. Walter Schroeder
Room E40-214

Dear Chip:

I think it is time to suggest that Jim Sullivan take some initiative with respect to HUD and the Lowell project.

Please see me the first of the week.

Sincerely,

John F. Collins

JFC/bwl
cc: Porrester
Brown
Wilson ✓
Seeger
Alfeld

*Copies to
meadows
seege*

WILLEM L. OLTMANS

*B.S.B.
Collins
C. Wilson ✓
F. Davidson*

AIR MAIL

JW7 10/7/71
OCT 18 1971

October 2, 1971

Dear professor Forrester,

It will interest you to know, that our Dutch Times (Nieuwe Rotterdamse Courant NRC) tonite still carried two articles by major writers, one: J.H. is Heldring, the Dutch Sulzberger: the other by de Kool, Science editor of the paper. Both extensively deal with our subject.

Some of the points de Kool makes are: "as far as I am concerned, Forrester is right...." begins his article: (Mind you, the paper has been writing continuously about you and your work: once the printed an entire page on the MIT report, but it is impossible to send you all.)

He asks, f.i., whether governments and parliaments won't become redundant, if we solve our problems in the future by computers. But, he asks, won't our future actions not be subject of the Law of Forrester that our decisions tend to make things worse ?

I wished I had time to translate all for you. Another Magazine "Beta" especially for scientists (dated 15 Sept) devoted it's entrie issue to you and your work.

Thins are really rolling !

warm personal regards,
sincerely

all
Willem L. Oltmans

Amerbos 205, Amsterdam-Nieuwendam, the Netherlands

OCT 18 1971

THE CLUB OF ROME

Rome, October 11, 1971
DAP/amp

Prof. Dennis L. Meadows
Massachusetts Institute of Technology
50 Memorial Drive
Cambridge, Mass. 02139, USA.

Dear Dennis:

I want to advise you that Pierre Schaeffer, Directeur de la Recherche of the French TV (ORTF) will be visiting the United States from November 15 and that he would like to meet you as well as Jay and Carroll. M. Schaeffer is very cultured and he is also informed about The Club of Rome, Forrester's work, your Report and all our ideas. He recently arranged a TV program in Paris with the participation of Bertrand de Jouvenel, David Brower and others, namely the roundtable to which you were invited as well. He has in mind also other initiatives to be developed in the next few months, perhaps in conjunction with the 'Limits to Growth' publication.

M. Schaeffer will phone you beforehand. He has been introduced to me by a friend of mine, M. Armand Marcel Petitjean, another insightful and thoughtful Frenchman who is very active in TV and book circles, particularly in matters dealing with the human condition, the need for ecological approaches to the modern problematique, how to gear our new knowledge in these fields to practical policies, etc. One day a meeting with M. Petitjean could be very interesting.

All the best.

Sincerely,

f. Aurelio Peccei
amp

(Dictated by Dr. Peccei and sent
in his absence)

M. Pierre Schaeffer
Directeur de la Recherche
ORTF
5, rue du Recteur Poincaré
Paris

M. Armand Marcel Petitjean
27 Avenue Marigny
Paris 8e.

Secretariat:

cc: Prof. Forrester, Prof. Wilson

• Rome: Via Giorgione 163, 00147 Rome - phone: 5107 - telex: Tecnital 61497 - cables: Romclub

Offices:

• Geneva: c/o Institut Battelle, 7 route de Drize, 1227 Carouge, Geneva - phone: 439831 - telex: Batel 23472 - cables: Battelle
• Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Iidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501

NOV 1 1971

THE CLUB OF ROME

Rome, October 27, 1971

DAP/amp

NOTE FOR: Dr. Alexander King
Dr. Saburo Okita
Dr. Eduard Pestel
Dr. Hugo Thiemann
● Prof. Carroll Wilson

US Edition of 'The Limits to Growth: A Global Challenge'

1. Both Carroll Wilson and myself have been in contact with Dennis Meadows in pursuance to the decisions and suggestions emerged during the ExCom meeting of Paris on October 4 and the following two days. There is some delay in the preparation of the final texts by Dennis and Dana Meadows, but I had yesterday ^{by Dennis} on the phone the following time schedule: Introduction, Chapters I, II and V to be completed by October 30 (practically without any change with respect to the text we have already on our hands); Chapters III, IV and VI (or the Conclusions, equivalent to VI) to be completed (but not 100% sure) by November 7, and then sent to ExCom. For sake of expediency I hope you are willing to rely on Carroll for any last minute corrections, as he has been in contact with all of us (except Okita) and has received our suggestions.
2. Apparently, there is very much intervention in this final stage of the Report by Jay Forrester, who, though not having official roles, has strong influence on Dennis. And Dennis does not appreciate, as for instance I do, the necessity of not delaying the publication of this Report--which should have been ready by July or August, but which will be practically out only in January 1972. All the place around is swarming with books, articles, comments, interpretations etc. of the world situation according to the lines that we have spearheaded, and there is wide mention also of the MIT project, but this Report is a kind of Phoenix which never appears. My comment is not intended to be a criticism, because I know the intelligence and accuracy with which the Meadowses are working, but I feel that we really fall behind the stream of events.

./.

Secretariat:

- Rome: Via Giorgione 163, 00147 Rome - phone: 5107 - telex: Tecnital 61497 - cables: Romclub

Offices:

- Geneva: c/o Institut Battelle, 7 route de Drize, 1227 Carouge, Geneva - phone: 439831 - telex: Batel 23472 - cables: Battelle
- Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Iidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501

3. There is also a problem of copyright, because Dennis believes it belongs to him, and I believe it belongs to The Club of Rome. But this is a marginal point which I think we can straighten up when I will go to Boston.
4. Carroll Wilson and I arranged that I will go to Boston Tuesday November 2 and that he and I will stay that afternoon and evening with Dennis to review all these matters and possibly to arrange all the details for the US publication. The following day, Wednesday 3, we may meet in the morning also with Jay Forrester. In the afternoon, the Meadowses will leave for a two-week California trip. I hope, however, that in the subsequent days the matters with Potomac Associates can be settled.
5. Jane King has revised the ExCom Presentation and Commentary trying to satisfy the observations made by ExCom members. She prepared a new Draft of the text, which was further revised by Alex King and then re-read by him and myself last week in London. I made to it a few corrections to have the text coordinated with the Report. The Final Draft is enclosed herewith. Actually you will find three parts. One is the Cover and Table of Contents as I understand they will be (the indication of Potomac Associates has to be added). The second is our 'Presentation'. The third is our commentary, which is now called 'The Significance of the Report' and which will go at the end of the Report. There are also two boxes, one 'The Club of Rome' and the other 'Toward a New Phase'. Please read this Final Draft and if you have any comments or modifications let Jane King (possibly copy to me in Rome) have them, so that our Final Text can be readied by the 8th or 10th of November: Alex will finally okay it.
6. If all this runs smoothly, it is possible that by the middle of November all the texts of the book--the MIT part and the ExCom part--are ready and by the 20th of November in the hands of Potomac Associates. This will hopefully permit them to have the book out and available to the public (and the personalities to which it will be directly mailed) by the end of January. This is a target date we should not postpone in my view.
7. This also means that at the beginning of December a full text can be given to those who need it for the translation in the

various languages which, according to the latest information, so far are: Japanese, German, French, Italian, Spanish, Portuguese, Serbo-Croat. It is possible also an English edition to be distributed in the UK.



Aurelio Peccei

Encl.

Note:

Dear Carroll:

As agreed, I am sending a copy of this note to your address in Geneva (with two sets of annexes) and one in the US if the first one should arrive late. If you can revise the enclosed texts before leaving Europe, please let Jane have them in Paris.

Cordially,



Aurelio Peccei

THE CLUB OF ROME

Project on the PREDICAMENT OF MANKIND

~~Phase One~~

EW *Mankel* *conventions*
copy
sent to June an
2 Nov,
1/11 EW

THE LIMITS TO GROWTH:

A GLOBAL CHALLENGE

by Dennis L. Meadows
Donella H. Meadows

System Dynamics Group
Massachusetts Institute of Technology
Cambridge, Mass.

yes

November 1971.

©

CoR Paes Van

Copy for Professor Wilson

Rome, October 25, 1971
DAF/amp

Mr. Idries Shah
24 Clifton Hill
London.

Dear Mr. Shah:

It was indeed a pleasure to meet you and discuss with you and Dr. Alexander King at his Club in London the other day. And I sincerely hope that it will be possible for me to renew this occasion in the near future.

The objective of our meeting was essentially to inform you more in detail of the purpose and activity of The Club of Rome, thinking that you had only vaguely heard about it. I am sure that you now know more about this 'sui generis' grouping. Let me however complete this information. The idea to create this small but hopefully influential entity started at a meeting convened in April 1968 in Rome--hence its name--at the Academy of Lincei, to discuss the symptoms of breakdown of human society appearing with higher levels of prosperity and the ever quickening application of new technology. The original nucleus of people was then enlarged. It has now grown somewhat in size but will be kept at least at present to a maximum of 100 people, mainly scientists, managers, educators, etc., none of whom are members of national administrations or directly engaged in the process of decision-making. There are presently some 60 members of 20 nationalities.

The main idea behind this initiative is that, while this wonderful or terrible technological era has only just begun, human society is already in a state of confusion and actually at a crossroads. By the combination of a variety of phenomena and situations it indeed finds itself confronted with a knot of unprecedentedly large, complex and interlocking problems, many of which have or tend to have global dimensions. Basically what is needed is a rethinking, rediscovery and reformulation of our position vis-à-vis the problems of a world which is undergoing metamorphic transformations at an always accelerating pace. But the first order of necessity is to gain a deeper understanding of what is actually happening on our planet and to human society at this moment of transition.

The Club of Rome was formed mainly with the objective of provoking this 'prise de conscience' by the intellectual and scientific communities, public opinion and, finally but necessarily, the decision centers of the world. To carry out this design, The Club of Rome has organized a series of contacts with key people in many important world centers as Moscow, Washington, Ottawa, Tokyo, Bern, Buenos Aires, Vienna, Stockholm, etc., and also with a number of international organizations such as ECOSOC, UNESCO, FAO, ECE, OECD, WHO, etc. The response has been growingly encouraging for an effort of this kind, which has prompted The Club of Rome to make a step forward from the phase of pure contacts.

To give more vigor and expressivity to this action, The Club of Rome resolved to start a Project on 'The Predicament of Mankind', having two main objectives:

- (a) to acquire and diffuse a real in-depth understanding of the present critical state of human affairs and of the narrowing and uncertain perspectives and options which are likely for the future if present trends are not corrected, and
- (b) to recognize and propose new policy guidelines and patterns of action capable of redressing the situation and keeping it under control.

As we mentioned to you, Phase One of the Project, funded by the Volkswagen Foundation, is being carried out at the Massachusetts Institute of Technology of Boston with the aim of bringing out by a simulation model of the world the modes of interaction of some of the principal variables which make the present world situation so complex and confusing. The Report on the MIT Project, with a presentation and commentary by the Executive Committee of The Club of Rome, will be ready in a couple of months. Its title indicates the nature of its contents: 'The Limits to Growth: A Global Challenge'.

In writing you I want to stress what Dr. King and I pointed out during our London meeting, namely that, while the Club of Rome is gathering so far mainly from the industrialized, market-economy countries of the Northern hemisphere, and to a lesser extent from some less developed areas, it wants to represent a true cross-section of the modern and advanced thinking of mankind, and thus it wants to benefit from, and be representative of, also the

other nations and cultures. And in addressing myself to you I am referring particularly to the views and interpretation of the contemporary world and its possible evolution as may be held by the leading spirits of what you called the 'Islamic Tribe'. Many points of wide concurrence, if not identity, in our thinking emerged during our discussion. Now, we would like you to consider in what way yourself and possibly a couple of other thinkers or philosophers from Islam could be involved in our meditation and activity. In taking the liberty of asking you this, I would only like to add that our group of humanists, scientists, intellectuals and managers is totally apolitical and non ideologically-oriented, as their interest is essentially centered in what I mentioned in the beginning, namely the welfare and future of humanity.

I enclose three more copies of the reprint from 'Successo' magazine on 'How to Survive on The Planet Earth' we left with you in London in case you want to use this document to start drawing the attention of some people to our initiative. However, I believe that probably some of them, and perhaps yourself, would like to consider also the MIT Report when it comes out.

Thank you very much for your patience in reading this letter and, looking forward to hearing from you, I am, with warm personal regards,

Yours sincerely,

Aurelio Peccei

Enclosures

3 Successo 3 ✓

cc: Dr. Alexander King

Copy for Prof. Wilson

Langton House,
Langton Green,
Kent.
LANGTON 2027

Ref. DAP/amp

8th November 1971.

Dr. Aurelio Peccei,
The Club of Rome,
ROME, Italy.

Dear Dr. Peccei,

Thank you for your letter of October 25th 1971,
which I regret I have not been able to answer before due to
having been away.

I was extremely interested in reading your literature
and making a close study of your letter in the light of our
conversations.

I am very much impressed by all that you are doing
and would like to take a full part in your activities. Since
I am able to interpret the mind of the East to people of the
West, and also to convey to people of the East the thinking
of really important circles in the West, I think that you will
find that I will be of use to this idealistic and extremely
important project. As the only non-political individual who
straddles by ancestry, contacts and activities the various
worlds within the "Tribe of Islam", and as someone who is
active in all its cultural areas, I think that you will find
that I have enough to contribute.

I look forward to hearing from you as soon as may
be convenient.

Yours sincerely,

Idries Shah

Idries Shah.

10/30

(Provisional letter paper)

THE CLUB OF ROME

Professor Carroll L. WILSON
Sloan School of Management
Massachusetts Institute of Technology
50, Memorial Drive
Cambridge, Mass. 02139

CoR/9004-9-45/VG/myg

23rd October, 1970.

Dear member,

Object: Preparation of Phase II of the Club of
Rome Project

As arranged with Dr Peccei, I am writing you to start preparing Phase II of the Club of Rome Project.

As you all know, a pilot project (Phase I) is currently under development at the MIT, which tries to establish the possibility of relating rationally the many interlocking elements of the present world system. Phase II will extend the research of MIT, diffuse knowledge about the critical problems and their relationships, and propose appropriate corrective actions of these are already visible. All this involves the participation of many people and organizations. Therefore a considerable effort is necessary to build a team like the one planned originally before the retirement of Mr H. Ozbekahn. The main research for the CoR will thus move from Cambridge to Geneva upon the completion of phase I, during the Summer of 1971.

The team in Geneva is planned in the following way: a research unit should be formed with a view to establishing a small permanent staff employed by Battelle in order to have a solid base for assuring continuity. In addition a study group should be formed on the basis of visiting staff which may act principally on behalf of the Club of Rome.

The task is to find able personalities for this ambitious task. The Battelle Institute will help financially to launch such a team and start establishing a suitable study programme.

Secretariat:

- Rome: Via Pastrengo 16, 00185 Rome - phone: 480041 - telex: Tecnital 61497 - cables: Romclub

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- Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Iidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501

This implies first of all the availability of a project leader, whose profile should be:

- . very high intellectual level,
- . high flexibility and understanding in view of the interdisciplinary nature of project, which involves utilization and formulation of data and concepts from various hard and soft sciences,
- . well founded knowledge of present world problems,
- . dynamic, intuitive personality with a flair for self-controlled idealism,
- . capability to stimulate a research team made of people coming from very diversified experience and fields of knowledge.
- . capability of working in English and at least one or two other languages,
- . a good compromise should be found between a man of established reputation and one potentially capable of making his reputation through this work,
- . the candidate should not be American or of any other nationality already strongly represented in the Club of Rome's activities, because of the need to keep a certain equilibrium and a world-wide open vocation,
- . the candidate must be available to work full time in Geneva for at least one year,
- . preferred age under 40.

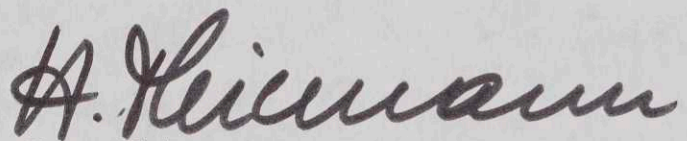
The project's main team should be a mixture of nationalities and competences, coming from different sectors: from systems engineering to political science, from physics to history, from biology to anthropology.

The project team will of course be completed by a series of consultants.

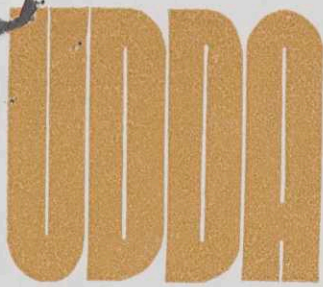
The Club of Rome members are kindly asked to help in finding candidates for project leader, project team members and consultants, being aware that this is a fundamental step in building up our activity.

Hoping to receive suggestions from you before November 30, I remain,

Yours very truly,



Hugo Thiemann



UNIONE
DEMOCRATICA
DIRIGENTI
D'AZIENDA

PALAZZO RUSPOLI
VIA DELLA FONTANELLA DI BORGHESE, 56
TEL. 67.97.875
00186 ROMA

2.

Il Presidente

During the conference will be illustrated an econometric model (WORLD 2) prepared by a team of Massachusetts Institute of Technology scientists upon an initiative of the Club of Rome; this model sketches the stages of a process towards an "equilibrium condition", in respect to the population growth and to the economic development.

The conference will last two days with several sessions during which different panels of experts will open the debate on the reports.

To guarantee that the conference has a maximum impact on public opinion and will stimulate ideas and suggestions, the Union has already approached certain foreign governments and agencies and international organizations (specialized agencies of the United Nations and official bodies of the European Community).

We would be most honoured to receive your precious contribution on the subject "Technology and pollution" or, if you prefer, on anyone of the other above mentioned subjects.

Needless to say, that in Rome you will be our guest, stay charges being on the congress organization account.

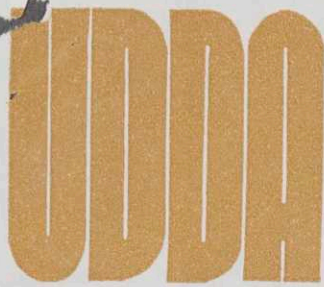
Hoping you will accept our invitation, we are at your disposal should you require further information and details concerning the conference.

With kindest regards, we remain

Yours very truly,

(Leo Solari)

Prof.
Carrol WILSON
Sloan School of Management
Massachusetts Institute of Technology
50, Memorial Drive
CAMBRIDGE, Mass. 02139 - U. S. A.



UNIONE
DEMOCRATICA
DIRIGENTI
D'AZIENDA

PALAZZO RUSPOLI
VIA DELLA FONTANELLA DI BORGHESE, 56
TEL. 67.97.875
00186 ROMA

OCT 16 1971

o c Perini

Il Presidente

Rome 11th October, 1971

Dear Professor,

the Unione Democratica Dirigenti di Azienda, in connexion with the Club of Rome and with the backing of national and foreign institutes, is planning an international conference - "Technology on Trial ?" - on the growing problems arising from the impact of technological, demographic and economic development on the conditions of the biosphere and more generally speaking, on the various conditions under which mankind is living. This conference is to be held at the end of February, 1972.

It is our intention to make a realistic evaluation of the foreseeable results of new industrial and agricultural technology and, at the same time, to draw attention to the limits of such development (insufficient to satisfy the great needs of the moment and still less able to provide an answer to those caused by the rapid expansion in population) and to the serious risks connected with the accelerated process of industrialization (urban development, pollution, the alteration of ecological balance).

The experience and suggestions of economists, biologists, engineers, sociologists and other experts will be discussed during the conference. Papers will deal with such a variety of subjects as "Technology and resources", "Technology and pollution", "Man and his environment", "The man and the megalopolis", "Probabilities of biological degeneration", "Population growth and human conditions", "New economic approaches for the mankind survival", "The quality of life and the values of a civil society" and "Radio-TV: a medium for a promotion of better quality of life", the purpose being that of revealing the inadequacy of measures so far taken and of identifying conditions necessary to a feasible answer to the population question and to economic growth that is compatible with the real necessities of mankind.

CABLE SENT

September 23, 1971

To Aurelio Peccei
Romclub
Rome, Italy

MEETINGS GENEVA POSTPONED UNTIL 17th stop

BELIEVE DESIRABLE I ATTEND EXCOM PARIS MONDAY, 4th, BUT UNABLE WITHOUT TRAVEL

PAID stop

PLEASE ADVISE WHETHER ROMCLUB RESOURCES PERMIT PAYMENT stop

REGARDS

CARROLL WILSON
SMICMIT, CAMBRIDGE, MASSACHUSETTS

Acct. 72526

THE CLUB OF ROME

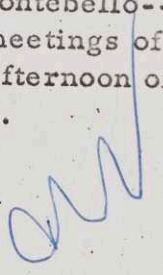
Rome, March 12, 1971
DAP/amp

Professor Donald N. Michael
Program Director
Center for Research on
Utilization of Scientific Knowledge
Institute for Social Research
The University of Michigan
Ann Arbor, Michigan 48106, USA.

Dear Professor Michael:

Thank you for your letter of March 3 and your contribution concerning a very hot topic that has to be considered in Montebello and thereafter, certainly, as well. It has very much to do with the effectiveness of our action. I cannot agree more on most of what you say, although I am a little less pessimistic than you on the impact our Project may have on decision makers--which does not mean that we should not do an exceptional effort to upgrade the ways and techniques presently available to put across our message. I am not so pessimistic, because of the widespread, though still confused, feeling even ordinary people have in every country that to-day's world is possessed by something fundamentally new and ominous, and that human conduct must somehow change. And there are also two other reasons. One is that probably The Club of Rome may use better than many other study groups some 'transmission pulleys' in disseminating new thinking, such as youth groups, the intellectual-scientific communities, and the mass media. The other is that The Club of Rome may catalyze in its direction also other 'intermediate groupings' which abound all over the world, such as the Atlantic Institute, the Conference Board, the World Council of Churches, the Overseas Development Council, the Japan Techno-Economics Society, etc.

However, your point is well taken. And I am sure that its discussion can be arranged in Montebello--though briefly, as everything else--both in the informal meetings of Sunday 4 and in the discussion periods in the morning or afternoon of April 5 before you leave at 4:00 p. m. for Montreal.



Secretariat:

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In this sense I have written to my colleagues of the Executive Committee, who I am sure will be glad to discuss this topic with you Sunday afternoon.

Looking forward to seeing you in Montebello I am, with kind personal regards,

Cordially,

Aurelio Peccei

MAR 16 1971


THE CLUB OF ROME

Rome, March 12, 1971
DAP/amp

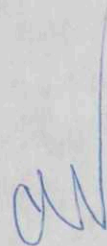
NOTE FOR EXCOM MEMBERS: Dr. Alexander King
Dr. Saburo Okita
Prof. Eduard Pestel
Dr. Hugo Thiemann
Prof. Carroll Wilson ←

Donald Michael has raised an important point that he wants to be discussed in Montebello. It is the question how to put through Phase One conclusions and recommendations (and then Phase Two's) so that they may have an actual impact in policy decisions and do not end up, as many other studies, on a shelf, making our effort sterile to all practical effects. I am attaching herewith his note of March 2 and propose that it be included with the other papers in the folder handed over to all participants in Montebello.

As Professor Michael has to leave the Seignior Club around 4:00 p.m. on Monday April 5 to catch a plane in Montreal, and would like this topic to be discussed possibly before that time, I have written him as per copy herewith, hoping that you are in agreement to this all.


Aurelio Peccei

Enclosures



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MAR 16 1971

THE CLUB OF ROME

Rome, March 12, 1971
DAP/amp

Mr. Charles S. Dennison
International Minerals & Chemical Corporation
485 Lexington Avenue
New York, N. Y. 10017, USA.

Dear Mr. Dennison:

Forgive me for answering at this late time to your kind letter of February 10. This is due to my long absences from Rome in the last period.

I know you very well from your publications and thinking and look forward to meeting you in the near future. As soon as I will have a moment, I will read your paper on technology and Latin American development, in which topics I am very much interested.

As to The Club of Rome, I am presently at a loss to see in which way a collaboration basis may be established. I will talk about it to Carroll Wilson the first time I see him. Unfortunately, he cannot attend a meeting we will have in Canada in the beginning of next month, and therefore some time will pass before I can touch this subject with him.

Probably some opportunity may be offered by the activities we hope to carry out during Phase Two of our Project on 'The Predicament of Mankind'. Phase one is conducted, as you well know, at MIT. Phase Two will be centered in Geneva but research and studies will be carried out, in as coordinated a way as possible, in many parts of the world, which offers the possibility to include in the overall program contributions from many centers of excellence, even small ones, which otherwise could not be mobilized. I suggest that in the meantime you think over what kind of contribution you might be willing and prepared to give and start discussing it with Professor Wilson.

Best personal regards.

Sincerely,



Aurelio Peccei

cc: Prof. Carroll Wilson ←

Note for Carroll: I do not know personally Dr. Dennison, but I heard people talking of him with the highest

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./.

respect. However, I ignore if he figures that he may act as an individual scholar, on a part-time basis, as a consultant in technological development matters, which are his main fields, or else, e. g. , as member of a group which some firms (his, International Minerals & Chemical Corporation, and others) could put together to support our research in some aspects in which they are especially versed.

A

Cable from Aurelio Peccei to CLW 5/4/71 2:20 p.m.

Reference my letter April 14. Please confirm
if May 9 and 10 you will be Geneva for ExCom
or else when you plan to be Europe next time.
Cordially.

Cable to Peccei

*Next possible visit Europe
Stockholm 25 June
20 July then months in
Provençal. Cordially*

Cornell Wilson

Cable sent to Aurelio Peccei May 5, 1971:

Next possible visit Europe Stockholm 25 June 20 July then month in
Provence. Cordially Carroll Wilson

(This was sent as a night letter).

OHNE ANSCHREIBEN

..... Anlagen

An Prof. Wilson, Cambridge (Massachusetts)

MIT DER BITTE UM

Stellungnahme

zum Verbleib

Erledigung

mit Dank zurück

Kenntnisnahme

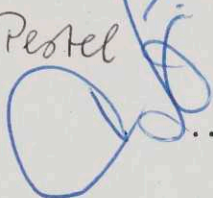
wie besprochen

Rückgabe

zuständigkeitshalber

im Auftrage von Prof. Pestel

M. S. 4
.....
Datum


.....
Unterschrift

Lehrstuhl A für Mechanik
Technische Universität Hannover
Prof. Dr.-Ing. D. Eng. h. c. E. Pestel
3 Hannover, Appelstr. 24 B, Tel. (0511) 762-4111/12

Kopie für Prof. Wilson

MAY 26 1971

May 13, 1971

11

- 218/71/71 -

Professor Dennis L. Meadows
Alfred P. Sloan School of Management
Massachusetts Institute of Technology
50 Memorial Drive
Cambridge, Massachusetts, 02139
USA

Dear Dennis,

I just returned from a meeting of the executive committee in Genf. Everybody except Carol Wilson could attend. The meeting was largely devoted to a report of the Canada conference, a discussion of its consequences and to plans concerning our future work.

Besides, we talked a good deal about the report on the work that is presently done at MIT under your direction. We decided that this report should be prepared in modular form:

- a) Abstract, summarizing all the results and conclusions of between ten and twenty pages,
- b) A complete description of the method, the global model, and all the table functions including the reasoning and discussions that led to the adoption of certain table functions, and
- c) A scientific annex which would give a complete account of the computer program used.

Furthermore, it was the consensus that the global model should include the employment sector as we talked about it when I was in Boston. I believe that Erich Zahn's paper forms a good basis for it. However, I think that his model should be greatly simplified in order to fit properly in the global model.

I also believe that in the global model world III the sector concerning capital is not yet quite satisfactory in my opinion.

I hope I am mistaken, but I fear that you will not be able to finish all the computer work before the end of June. Experience shows that the work on the global model once you start your runs on the computer including all the various alternatives will entail a lot of corrections in the model and require far more time than you allotted to this part of the program.

Looking at the terms of our contract with the VW-Foundation, I believe that your group should now devote practically all its time on the finishing and exploitation of the global model. Of course, the sub-models would constitute a very important supplement to the report; the core, however, is the global model, because the VW-Foundation granted the Club of Rome the money for the global investigation.

I consider it quite essential, and the executive committee is with me of the same opinion, that Zahn and Melling continue to work with you until the report on Phase I is completed. Even if that means that they have to stay in Cambridge until autumn.

On May 26 Aurelio is in the East Coast, and it is possible that he will visit you in Cambridge. In any case the executive committee would like to have a table of contents of the report as soon as possible. Since we in the executive committee are responsible for the report, we should like to know early enough about the contents of the report so that we can bring in our suggestions in time. With this in mind we decided that you should be invited to come to Hanover between 15th and 18th of June. On June 15th Okita will also come to Hanover and on 17th Hugo will join us. You could stay with us in our new home so that we would have a whole week to work together. Besides, we could see the Volkswagen people in order to discuss also with them the time schedule of our work.

I have very hard times behind me. After I returned from the United States I did not feel strong enough to attend the Canada meeting. However, in view of my work with the Deutsche Forschungsgemeinschaft I did not find the time for a real rest. Besides, the rebuilding of my new home needed my close attention because the architect was committing one error after another. This finally led to an expense amounting to 300% of the estimated costs in January. Even while I write these lines, we have not moved in yet. However, I am now convinced, that we will be in our new home by the middle of May. I am sure you will like it, when you come to Hanover.

I was very glad to learn that Dana is now firmly located in our project. How did you make out in New York with your proposal about population development in India? Hoping that you both are doing well, and that you are making good progress in our project, I remain, with my cordial regards to you and Dana and all our collaborators,

sincerely yours,

CC.: Dr. Peccei
Prof. Forrester
Prof. Wilson
Dr. Thiemann
Prof. v. Kortzfleisch



MASSACHUSETTS INSTITUTE OF TECHNOLOGY

3/23

19

Memo to

CLW

Room

Ext.

... For the Club of Rome meeting
April 4-6

from

Room

Ext.

MAY 21 1971

THE CLUB OF ROME

Rome, May 14, 1971
DAP/amp

To ExCom Members

High level meeting in Canada

Bob Uffen has phoned that he has been called by the Governor General of Canada, who is very interested in the CoR. They discussed it for 2.30 hours. Bob's idea is that this may lead to the formation of a special CoR group in Canada, similar to what has been done in Japan, to support the CoR and organize the Canadian participation in Phase Two.

The Governor General would like to have a meeting with a few CoR members (e. g. three from Europe and three from America, plus two or three from Canada) and some very high Canadian personalities (some 12 people totally), starting at 10 o'clock in the morning and terminating at about 3 o'clock in the afternoon to permit return by late afternoon planes to Europe. Among some different possible dates, that of Tuesday June 15 has been selected.

Aurelio cabled Carroll Wilson (who will advise also Dennis and Jay) and will if necessary advise others. In Europe, besides Alex King, especially mentioned, and who has confirmed acceptance, there might be either Eduard Pestel or Hugo Thiemann or eventually some other still to be selected. Aurelio will also advise Saburo Okita when in Japan.

He will then confirm the names of the participants to Bob Uffen (telephone: office (613) 992 4933; home (613) 749 1789).

Air fares will be charged to the budget of the Scientific Secretariat in Ottawa.

Carroll
CoR

THE CLUB OF ROME

MAY 20 1971

Rome, May 12, 1971

To all Club Members

'THE PREDICAMENT OF MANKIND' PROJECT
Phase One: 'The Dynamics of Global Equilibrium'REPORT
with Conclusions and Recommendations

Dear Member:

You will find herewith two documents which you are kindly asked to review and send back with your suggestions. They are:

a. Draft of a letter accompanying the Report for Phase One.

As you know, this Report will be completed by the MIT under the leadership of Dennis Meadows during the summer of this year. It was decided in Montebello to disseminate it as widely and effectively as possible.

The draft herewith will serve to present it to the people on the list herebelow, with the request that, if they agree, they in turn distribute and discuss this Report as widely as possible. On principle it was decided that this letter should be signed by members of the ExCom, but if you think that in some cases it is better for you to sign it, please mark the names on the list to whom you want to address it personally.

On completion of the Report it may be judged preferable to include in it some of the elements of this letter. Your opinion is therefore asked more on the letter's approach than on the text itself.

b. Provisional list of addressees.

This has been prepared including some 1,500 names of selected scientists, intellectuals, newspapermen, corporate leaders, professors, government officials, diplomats and politicians who have already been approached or have shown interest in the CoR type activities. Of course, for our purpose, the list is far from being complete and is of a mixed nature. It includes

Secretariat:

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people who are already convinced and others who need convincing, both senior and junior; there is no balance among disciplines or walks of activity; many important names are missing, particularly in some areas. Your contribution is asked to make it more relevant, so that we can directly reach a fairly large number of people--e. g. 2 to 3,000--who by their position or capacity are important in fostering an understanding of the present critical state of human affairs, and helping to devise remedial action and adopt henceforth more coordinated and far-sighted policies.

For convenience the total list has been divided into 17 groups according to the following geographic areas:


Africa, Asia, Australia, Benelux, Canada, Eastern Europe, France, Germany/Austria, Japan, Latin America, Mediterranean Europe, Northern Europe, Switzerland, United Kingdom, United States, USSR, International (and similar) Organizations. We are sending you herewith the sub-lists corresponding to the areas marked (*), which we presume are your main interest. If you want to have other groups also, please let us know.

You are kindly requested to:

- = send any suggestions on the draft letter;
- = correct the attached sub-lists wherever inaccurate;
- = complete them with other names with full titles and addresses (please add also those you wish to suggest in other geographic areas);
- = make suggestions as to distribution of the Report and its follow up;
- = send your answer back to this Secretariat in Rome by June 30, 1971.

Thank you.

Sincerely,


Aurelio Peccei

Enclosures

Note for Prof. Wilson:

To the ExCom members the list of names is given for all areas. Being a bulky parcel, its sent you under separate cover.

DRAFT OF LETTER ACCOMPANYING THE PHASE ONE REPORT

The Club of Rome Project
on 'The Predicament of Mankind'

PHASE ONE

Dear Sir:

This letter is sent to you and to some 3,000 other people throughout the world, men and women eminent either in intellectual performance--scientists, humanists, writers, artists, educators, planners--or as decision makers in government, politics, industry, finance, administration. Some of them are among today's leaders, others will be in the forefront in a few years. Also student and other youth groups are being approached. And a number of conferences, seminars, roundtables, etc. will be organized in various world centers in conjunction with international organizations or other institutions interested in the problems of modern society.

The objective is to alert people's awareness to the challenges and threats of this epoch of unparalleled knowledge and achievements, but also of breathtaking and often unwanted change.

New sorts of problems are emerging in every part of the planet, so complicated and intertwined that customary approaches and measures are totally inadequate to handle them. And, for the first

time, some of these problems are acquiring world-wide dimensions. A point has thus been reached when no major issue of our time can be singled out from the bulk and dealt with separately, and no nation can hope to resolve its own problems in isolation. Thus, while the nuclear and technological age is still dawning, a backlash of problems is already swamping all peoples and cultures.

There is no wisdom in belittling the seriousness of this collective predicament, or the danger of its growing in the decades to come, or the difficulty of devising institutions and strategies capable of restoring, in our overcrowded, plundered and polluted planet, the conditions for a wholesome human life.

The Club of Rome considers that the responsibility to face this situation rests primarily on the present adult generations, and that the first requirement is to understand how the new realities confronting us differ from those which in the past centuries and millennia permitted man's biological and psychosocial evolution, how these have been transformed through his manipulations and, most of all, how the new, hybrid, partly natural and partly man-made realities that now condition life on our planet actually work.

To contribute to this understanding, in August 1970 The Club of Rome initiated its Project. Phase One is aimed at discovering

by simulation models of the world the modes of interaction of some of the global system's principal variables, or at least those which besides appearing dominant are sufficiently known. Much has been said about modelling, pro and con, as a means to represent the real world, about the reliability of the data available, and the importance of the less quantifiable factors. All these aspects have been considered in organizing our work. It was carried out during eleven intensive months at the Massachusetts Institute of Technology by an international group of young scientists strongly supported by external experts and the best information on all the substantive problems considered. Never before has such a comprehensive and integrated analysis been made and, although still a prototype effort, it represents a bold first step in the right direction, meaningfully deepening our understanding of world macroproblems.

The conclusions and recommendations of Phase One of our Project--along with an illustration of the rationale, methodologies and information base which supported it--are presented in the Report herewith. The picture one can gather of mankind's options at this stage of human evolution is extremely sobering. It contains fore-warnings that--unless we rapidly stop using anarchically our formidable technological power, and managing an increasingly globalized society in a fragmented, egocentric and shortsighted manner--

the decades ahead will be characterized by extreme crises ending in some sort of catastrophe--at the gigantic scale of today's events.

For these reasons we hope that you will read the attached Report. If you feel that it is convincing, and that it does call for consequential action, then we hope also that you will contribute in the sphere of your influence to the diffusion of these ideas and the search for remedial and corrective activities. We do not wish to suggest what you can do, because it depends on many factors, including your own willingness to make an effort in the sense indicated. However, the easiest task that comes to mind is that the message included in this letter and the Report be disseminated and discussed as widely as possible among all those who can influence public opinion or policy decisions, so that further steps can be made in the right direction.

Before concluding, we would like to inform^{you} that The Club of Rome is now outlining Phase Two of its Project. This does not mean that the work undertaken in Phase One is completed. Far from it: in-depth systemic analysis of the world as a unity must be an unending undertaking, as it alone can offer a perception of the constraints and limitations inherent in our finite world systems, and of which junctures that generally escape detection when subsystems are studied separately may be the most critical. Therefore we hope that this work will be continued by some ad hoc organization at the proper international level.

The Club of Rome will concentrate during Phase Two on the study of two essential aspects having to do with the element 'discontinuity',

and which add to the difficulty of providing a winning response to the global problematique. One is represented by the disequilibria and dishomogeneities which provoke grave instabilities in the total system. On the one hand, the world is practically shrunk to village size; on the other, the cultural basis and aspirations of its inhabitants remain extremely varied. But the most explosive of these disruptive internal tensions is linked with the growing polarization of human societies into the developed and the underdeveloped, and it would be fatal to assume this to be a permanent, structural feature. The other aspect concerns our capacity to reverse the trend by introducing, instead, favorable discontinuities. The question is how rationally and effectively to transfer the knowledge acquired to the terrain of political action, so as to steer society's course toward the objectives we may want.

You may be interested to know that to carry out Phase Two our activity will probably be organized in a polycentric form, with a network of research projects executed from different viewpoints or with different motivations, scope or methodology in various parts of the world--such as Japan, Germany, France, USA, Canada, Latin America and other developing areas--with a steering committee and coordinated activities centered in Geneva. If you want to know more, or have any suggestions, please write us.

Sincerely,

Enclosure



Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

July 3, 1970

Memorandum

To: MEMBERS OF THE CLUB OF ROME

From: PROF. JAY W. FORRESTER

Subject: SEMINAR IN CAMBRIDGE, MASSACHUSETTS, JULY 20-JULY 31 ON THE
DYNAMICS OF SOCIAL SYSTEMS

A meeting of the Club of Rome was held in Bern, Switzerland on June 29 and 30. This letter is addressed primarily to the members who were not present at that meeting.

You have already received descriptions of the proposed Club of Rome project dealing with the future trends in the world situation. During discussion of the project, it developed that suitable methodology for dealing with the dynamics of social systems did not exist within the project plans and also that financial support for the project was being delayed by the absence of a visible methodology.

I suggested to the members present in Bern that we believe we have a suitable methodology here at MIT, developed in connection with our work in the dynamics of managerial systems and broader social systems. I am speaking of the methods used initially in my book, Industrial Dynamics, and more recently in my book Urban Dynamics (both published by the MIT Press).

At the meeting in Bern, an invitation was extended to the Executive Committee of the Club of Rome to come to the Massachusetts Institute of Technology for a period of two weeks to evaluate for themselves the relevance of these methods and approaches. That invitation was accepted and the meeting will be held the last two weeks of July.

Several members of the Club of Rome who are not on the Executive Committee indicated that they wished to attend the meeting at their own expense. This letter is to invite any other members to join with us for the period from July 20 through July 31. It is my understanding that the Club of Rome will not be able to pay expenses. Transportation, meals and hotel accommodations will be the responsibility of the individual member. There will be no charge for attendance at the symposium itself.

If you wish to attend, please let me know by telephone or cable; time for making arrangements is very short. We will arrange a block of hotel rooms and try to handle other local arrangements.

The plan will be for lectures in the mornings. The afternoons will be devoted to guided work sessions in which the individual members will obtain experience with modeling and computer simulation of a simplified social system. The objective will be to convey sufficient knowledge and experience to permit evaluation of the methodology in the context of the larger goals of the Club of Rome.

All members will receive additional material about the meeting whether or not they have indicated plans to attend. Please notify me as soon as possible whether or not you will attend so we will know definitely what to expect. A list(probably incomplete)of those attending in Bern is given below in case you wish to contact anyone for additional information.

Professor Jay W. Forrester
Alfred P. Sloan School of Management
Massachusetts Institute of Technology
Building E 52-454
Cambridge, Massachusetts - 02139
USA

Telephones: office: Area 617-864-6900 ext 2654
home: Area 617-369-9369

Cable: MIT Administration
Cambridge, Mass., USA

Those Attending in Bern:

M. Serge Antoine
Professor Frits Bottcher
Dr. Jeremy Bray, M. P.
Dr. Jakob Burckhardt
M. Louis Camu
Professor Jay W. Forrester
Professeur Jacques Freymond
Mr. Pierre R. Gendron
Dr. Alexander King
Dr. T. Adeoye Lambo

Professor Keichi Oshima
Professor Hasan Ozbekhan
Dr. Aurelio Peccei
Professor Dr. Ing. Eduard Pestel
Dr. John Platt
Professor Olivier Reverdin
Dr. Ernesto Sabato
Dr. Hugo Thiemann
Dr. Bertram D. Thomas
Dr. Paul A. Weiss

June 1, 1971

Proposed Selective, Annotated Environmental Bibliographic Service by Woodrow Wilson International Center for Scholars

Proposal - The Woodrow Wilson International Center for Scholars plans to undertake a continuing, selective, annotated bibliographic service covering the current, major environmental documentation and papers prepared for the U.N. Conference on the Human Environment. Both before and during his visit to the Center in May, Mr. Maurice F. Strong, Secretary General of the Conference, gave this proposal his warm endorsement and has offered assistance from the Secretariat in support of the project. Contacts have already been made with a number of international organizations and officials have agreed to supply the Center with documentation. A partial list of these organizations is attached. The bibliography will also include available country position papers and studies as obtained and certain closely related writings, with special emphasis on the political, legal, economic, social and institutional aspects of environmental problems of global or international significance. With assured early receipt of copies of the cited papers, the Wilson Center will provide regular, free copies of the bibliographic service to the cooperating institutions and governments.

Discussion - The heavy schedule of international and regional conferences, preparatory and committee meetings on environmental problems in 1970-71-72 has already generated a mass of documentation on the multiple issues being addressed. With the approach of the U.N. Conference on the Human Environment in Stockholm in June of 1972, the volume of relevant papers will multiply geometrically.

For the responsible government official, and others with scholarly, professional or business interests in following closely major developments relating to the environment, there are several severe obstacles:

1. The multiplicity of committee, preparatory, working group and conference meetings and diversity of documentation alluded to above. Papers of importance will be drafted and filed in New York, Geneva, Washington, Paris, Brussels, Rome and other capitals on all continents in connection with the scheduled meetings.

2. The newness, extreme dispersion and ill-defined limits of the subject, extending from air and water pollution, resource exploitation, population growth, industrial and technology expansion, development and environment issues, questions of human settlement--urban and rural, institutional and organizational matters, and a number of vital "quality

of life" intangibles intimately connected with man's true ability to enjoy a decent "environment" in the broadest sense. The spread of topics involves greater diversity of fields, disciplines, occupations and professions than virtually any other subject approached by governments to date. A complete list of topics being covered will appear in the thesaurus discussed below.

3. The situation is further complicated by the fact that much relevant material is in the form of unpublished reports and documents, surveys and background studies that are not publicized.

4. There is no standard bibliographic apparatus for dealing with the issues generated by environmental problems. Existing abstracting and indexing services fail to provide the needed references for a complete search of the rapidly expanding literature.

5. Most elusive is environmental literature on the social, economic and legal aspects, and international in scope. For example, the new monthly Environment Information Access published by Ecology Forum has good coverage of journals, books, films on the scientific and technological problems but has little in the fields of most interest to the coming conferences and almost no non-U.S. entries.

To provide the basic information resources needed for policy-related research and intelligent governmental decisions, some form of bibliographic service is urgently needed, and needed now, while the volume of such environmental literature is still within manageable proportions.

Neither the President's Council on Environmental Quality nor the new Environmental Protection Agency has been able to build complete library and bibliographic services. There are a number of institutions, existing and proposed, which, hopefully, will eventually provide such services. Among these are the proposed U.S. Department of Natural Resources, the proposed National Institute of Ecology, the proposed National Institute of Environmental Policies, and the new Environment Information Center of Ecology Forum. None of these, however, can possibly undertake the suggested bibliographic service for at least another year. Meantime, with limited present funds and existing and new personnel, the Woodrow Wilson International Center for Scholars is prepared to undertake to provide a selective environmental catalog and annotated bibliography--if rapid access to necessary conference documentation can be assured from the concerned international secretariats and agencies.

The following steps are required:

Acquisition - This process involves gaining the active cooperation and assistance of the international, regional and national agencies in obtaining on an assured, regular, early basis copies of all major environmental documents, reports and studies being prepared for the stated conferences. This objective is being carried out by correspondence and discussions with the relevant agencies and the Center's staff and scholars.

Preparation of a Thesaurus or Subject Heading List - Such a thesaurus does not presently exist and subject headings used in libraries and indexes are inadequate to retrieve such specifics as the relationship of development and environment; international environmental institutions and proposed changes; the effect of economic growth; use of resources per capita; the role of industry, etc. The Center's librarian will prepare such a thesaurus with the advice of the environmental scholars at the Center and experts from other organizations.

Cataloging and Annotating - Relevant documents will be cataloged for the Center Library's permanent collection by an expert in document cataloging as well as listed for the bibliography; this will insure future access to the material. When abstracts have not been provided by the authors, annotations will be prepared with outside assistance under the supervision of a bibliographer.

Publication - A special grant is being sought to provide funds to publish the first issue in the fall of 1971 (provided documents from the listed agencies are received promptly) and to permit the most efficient storage and retrieval system to keep the proposed service updated at frequent intervals. This will constitute the first complete review of current international, political, social, economic and legal environmental literature designed for action by governments. It will be made available without charge to the cooperating agencies, and, if a commercial arrangement is entered, at cost plus to others. The Center's objective will be to continue issuing the bibliography at regular intervals, unless and until another institution is prepared to assume the responsibility for carrying on the work.

List of Participating Organizations

1. Secretariat of the United Nations Conference on the Human Environment
2. Food and Agriculture Organization of the United Nations
3. International Atomic Energy Agency
4. International Labor Organization
5. United Nations Educational, Scientific and Cultural Organization
6. World Health Organization
7. World Meteorological Organization
8. United Nations Economic Commission for Europe
9. Commission of the European Communities
10. Council of Europe
11. International Maritime Consultative Organization
12. North Atlantic Treaty Organization

SEP 14 1971


THE CLUB OF ROME

Rome, September 6, 1971
DAP/amp

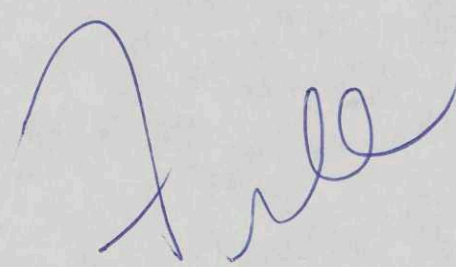
NOTE FOR: Dr. A. KING
Dr. S. OKITA
Dr. E. PESTEL
Dr. H. THIEMANN
Prof. C. WILSON ✓

The Woodrow Wilson International Center for Scholars asked me if The Club of Rome may be interested in the bibliographic service they intend to create, as per memo attached.

I answered that our Club as such is not. I relay to you the document, in case any of the organizations connected with you would instead be.


Aurelio Peccei

Enclosure



Secretariat:

- Rome: Via Giorgione 163, 00147 Rome - phone: 5107 - telex: Tecnital 61497 - cables: Romclub

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- Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Iidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501

THE CLUB OF ROME

Rome, July 22, 1971
DAP/amp

NOTE FOR EXCOM MEMBERS AND DENNIS MEADOWS

1. Saburo Okita left me in Moscow a collection of essays on Japan and the world economy, noting that one of them may be somewhat relevant to the CoR work. I read it, and found it relevant indeed, before I noticed that it was intended for Dennis Meadows.

As many of the problems of the developed and less developed countries are analyzed therein with acumen and from interesting angles, I take the liberty of sending to you all a reprint of the essay in question, hoping that Okita does not mind my butting in on his dialogue with Dennis.

2. Okita's comments on the preliminary draft of 'The Limits to Growth: A Global Challenge' Report are summarized in this note he also left me in Moscow:

"I have read the whole text and generally satisfied with the content. Several comments are written on the margins of the paper. Following are some of the general observations:

1. It may be desirable to state more explicitly that for poorer countries substantial increase in investment, production and consumption will be necessary until they become able to meet minimum necessities.
2. Assumptions on future population trend should be mentioned clearly somewhere in earlier part of the text, as they affect the results in Chapters III and IV.
3. Although there are general qualifications in the beginning part of Chapter IV expressions are sometimes too strong and assertive. Need for softening of some wordings."

I will hand over to Dennis, ^{in his} the paper itself, with Okita's handwritten comments.

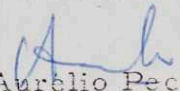
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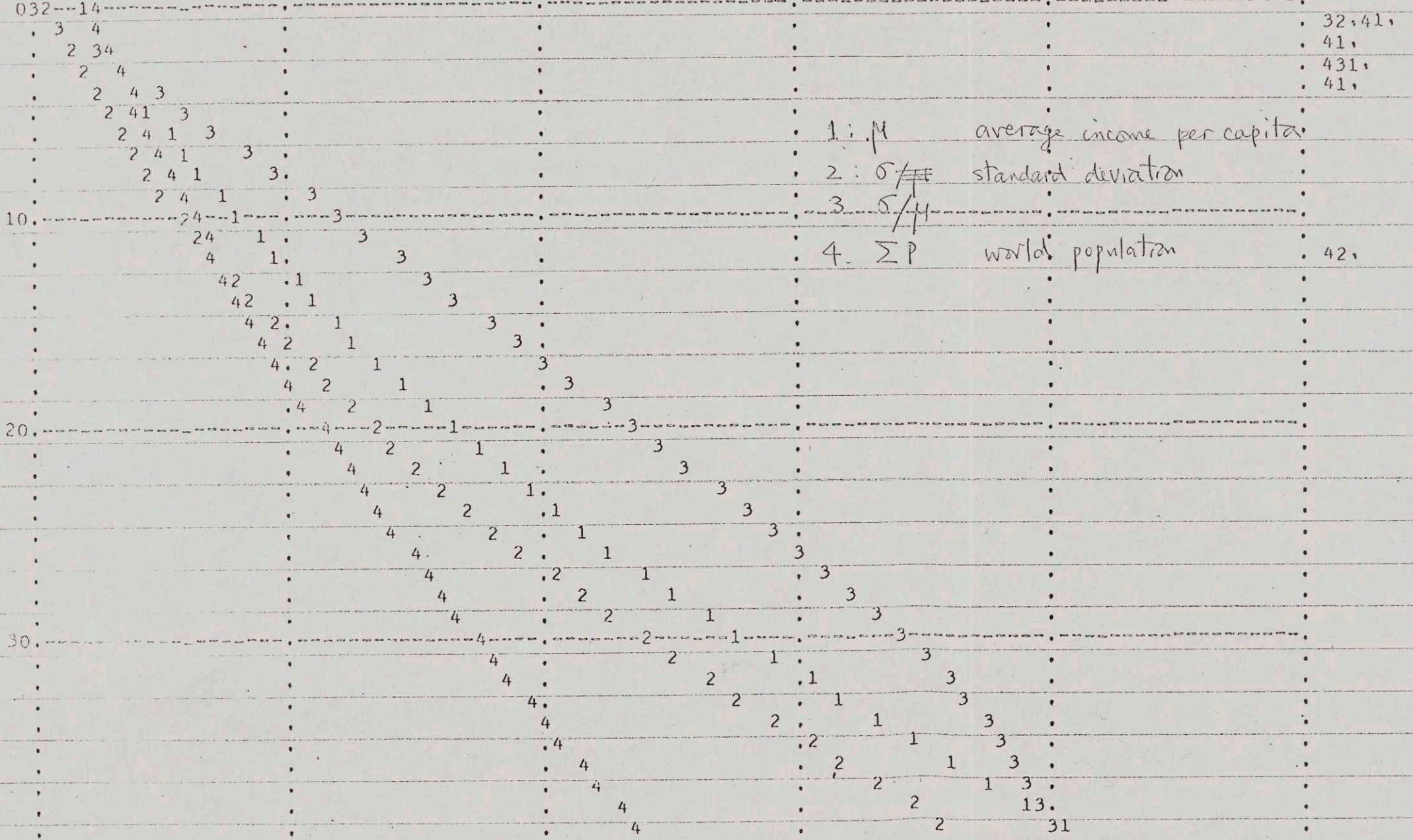
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- Geneva: c/o Institut Battelle, 7 route de Drize, 1227 Carouge, Geneva - phone: 423250 - telex: Batel 23472 - cables: Battelle
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Aurelio Peccei

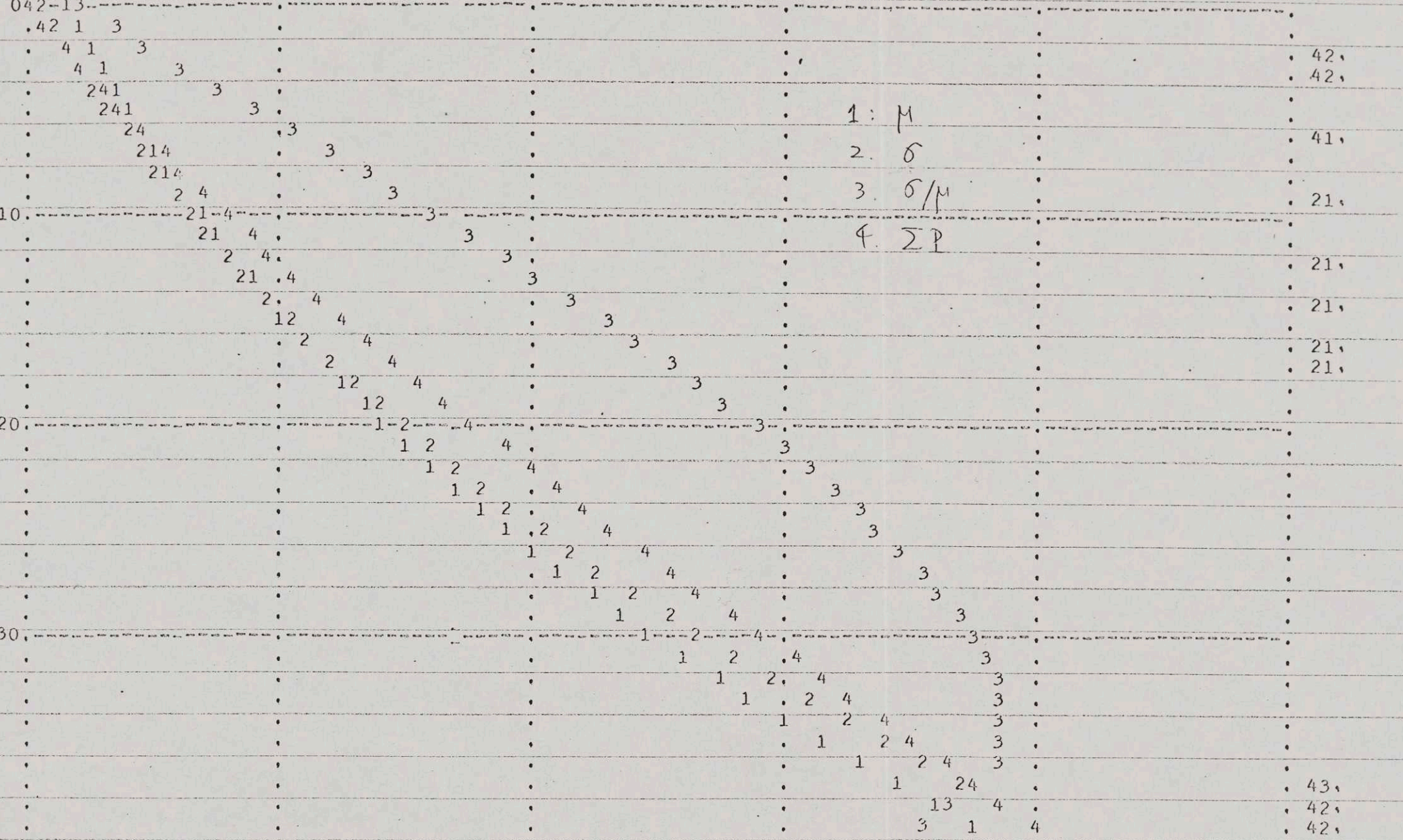
PLOTTED DATA ^① 1% of GNP → Foreign Aid

7.00E+02	1.10E+03	1.50E+03	1.90E+03	2.30E+03	2.70E+03 (1)
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3.00E+01	5.00E+01	7.00E+01	9.00E+01	1.10E+02	1.30E+02 (4)



PLOTTED DATA (2) 2% of GNP → Foreign Aid

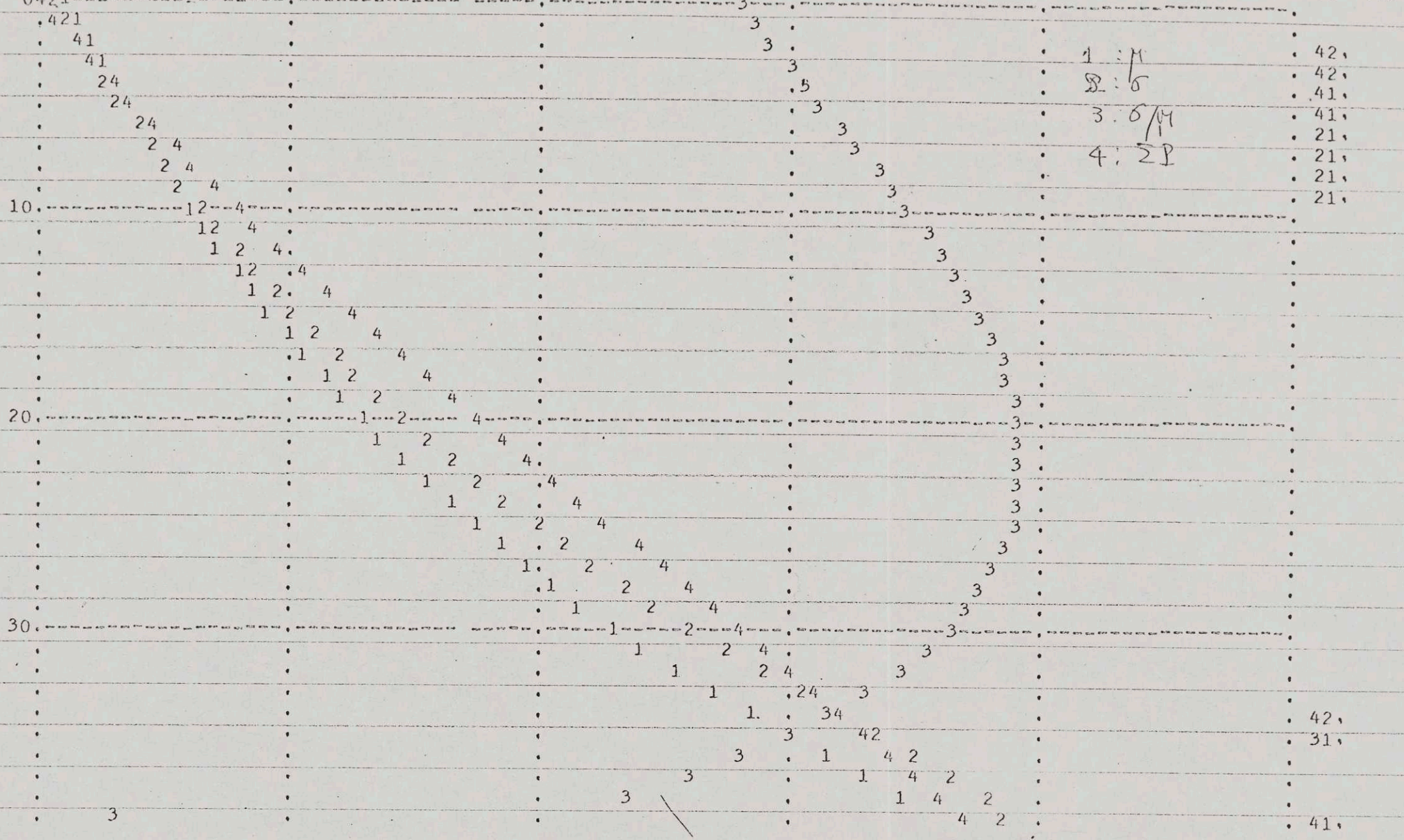
7.00E+02	1.20E+03	1.70E+03	2.20E+03	2.70E+03	3.20E+03 (1)
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1.33E+00	1.37E+00	1.41E+00	1.45E+00	1.49E+00	1.53E+00 (3)
3.50E+01	4.50E+01	5.50E+01	6.50E+01	7.50E+01	8.50E+01 (4)



PLOTTED DATA

(3) 3% of GNP → Foreign Aid

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1.25E+00	1.28E+00	1.31E+00	1.34E+00	1.37E+00	1.40E+00 (3)
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①
1% of GNP → Foreign Aid

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0 5 7 184	.6		2	3		41,09,
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PLOTTED DATA (2) 2% of GNP → Foreign Aid

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01 5 8	4	6.	2	3	.	.87,09	
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0 57	8	64	2	3	.	.091	
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200-9	57	6	2	4	3	.01	
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0	9 587 6	.	.	3	4	.92,01	
0	2 9 876	.	.	3	4	.75,01	
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0	2 8967 5	.	.	3	4	.01	
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3002	879	5	3	4	.	.86,01	
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20	68 9	.	5	3	4	.21,87	
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PLOTTED DATA

(3)

3% of GNP → Foreign Aid

	-1.00E+01	1.00E+01	3.00E+01	5.00E+01	7.00E+01	9.00E+01
0	05	2163	.	.	.	54,0987
.	07	26 3	.	1	.	21,754,098
.	057	162 3	.	.	.	54,098
.	0571	6 2.3	.	.	.	74,098
.	0547	6 23	.	.	.	41,098
.	0547	6 .3	.	.	.	32,51,098
.	0547	6 .23	.	.	.	51,098
.	0547	6 .2 3	.	.	.	0981
.	05 7	6 .2 3	.	.	.	74,0981
.	05 7	6 .2 3	.	.	.	74,0981
10	08	74 6 2 3	.	.	.	85,091
.	087	6 2 3	.	.	.	64,85,091
.	058	64 2 3	.	.	.	87,091
.	058	6 4 3	.	.	.	62,87,091
.	07 8	26 4 3	.	.	.	75,091
.	07 8	2 6 . 4 3	.	.	.	75,091
.	07 82	6 . 4 3	.	.	.	75,091
.	07 28	6 . 43	.	.	.	75,091
.	075	8 6 . 4	.	.	.	43,52,091
.	027	8 6 . 34	.	.	.	75,091
20	027	8 6 . 3 4	.	.	.	75,091
.	097586	. 3 4	.	.	.	021
.	09 786	. 3 4	.	.	.	021,75
.	09 856	. 3 4	.	.	.	021,87
.	0 98 6	. 3 4	.	.	.	021,65,87
.	0 986 5	. 3 4	.	.	.	021,87
.	0 97 5 3	.	.	.	.	021,76,98
.	0 97 35	.	.	.	.	021,76,98
.	0 97 3 . 5	.	4	.	.	021,76,98
.	0 893	. 5	4	.	.	021,976
30	0	89	5 4	.	.	021,9763
.	0 389	.	5	.	.	021,976
.	03 79	.	54	.	.	021,986
.	0 79	.	4 5	.	.	0321,986
.	30 79	.	4 5	.	.	321,986
.	30 79	.	4 .5	.	.	321,986
.	30 798	. 4	.	5	.	321,86
.	3 0798	4.	.	5	.	321,86
.	3 04986	.	.	5	.	321,07
.	43 0 98 6	.	.	5	.	321,07

DISTRIBUTED WORLD MODEL

1. Independent variables

- t; time
- x; national income per capita

2. Distributed variables

- $P(x,t)$; population density
- $Y(x,t)$; Density of gross product = xP
- $Z(x,t), \dots$; Other distributed variables

3. Global variables

- $N(t)$; Natural resources
- $F(t)$; Food
-; Other variables

4. Basic equations of distributed variables

P;
$$\frac{\partial P}{\partial t} = (BR - DR)P - \frac{\partial (uxP)}{\partial x}$$

where u = growth rate of national income per capita

$$= \frac{\text{deposit rate} \pm \text{rate of foreign aid}}{\text{marginal capital coefficient}} - (BR - DR)$$

Z;
$$\frac{\partial Z}{\partial t} = q_z Z - \frac{\partial (u_z Z)}{\partial x}$$

where u_z = growth rate of Z

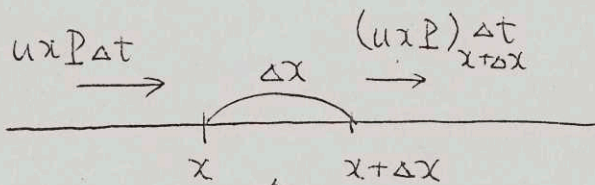


Fig. 1

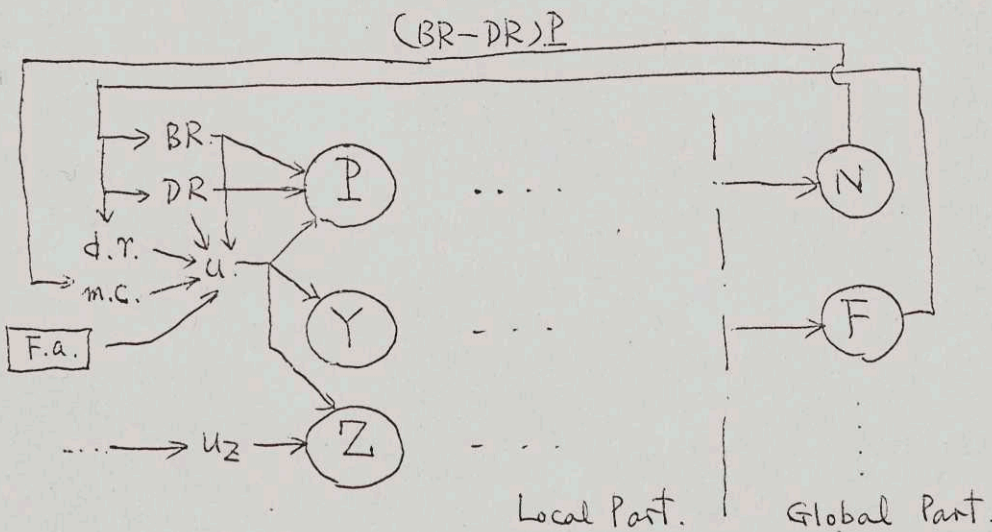


Fig. 2

Lues to Meadows

Research Items of the Center Team of the Club of Rome

— A Proposal —

Y. Kaya

MIT team has recently developed the world model and brought us very interesting results. The research by MIT team, however, is only a step to the further research on the world future. The items described below should be good ones of the research following MIT work.

1. Study on the distributed world model

The study by MIT team on global behavior of the world tells us that to stop 'growth' of the world is almost an inescapable task, of mankind to survive. One problem in carrying out such a task is that there exists a big gap between developed and developing countries with regard to the level of life. It stands to reason people in developing countries disagree with the proposal to stop 'growth', without saying how to narrow the gap during the transient period from 'growth' to equilibrium. A distributed model which can manifest distribution of important variables over the world is capable of doing this. It is then needed to develop such a model. The Japan work team has recently developed a model of novel type for such a purpose. An assumption is made here that important parameters of a country such as birth rate and death rate are the same for all countries to the extent that national income per capita is the same. Based on this assumption the model can be described by a number of partial differential equations, with time and national income per capita as independent variables. It can manifest distribution of important variables of the world along the axis of national income per capita. What the Japan work team did is to construct a so-called pilot model, a very simplified one of which results of test run is shown in a separate paper. Further development of this model will help very much to find course of action the world should take, together with a thorough survey of studies on relations between developed and developing countries so far.

2. Characterization of the World Problems (Development of the methodology to characterize the World Problems)

There are a lot of important problems which are not easily quantified, such as ethnic problems and alienation of young people. It is then hard to construct a dynamic system model involving these problems only by the use of techniques of system dynamics or of econometrics, without making many strict assumptions on their properties, which may decrease validity of the constructed model.

A way to overcome this difficulty is to develop a loosely defined model such as a graph in which any strict assumptions (in the form of mathematical relations) on the events concerned are avoided. Through this model the behavior of the system may be grasped but in, so to speak, a semi-quantitative way.

It is the point that such a semi-quantitative model will help us much more than strictly quantified model constructed under a lot of strict assumptions. The event map developed by Japan team is an example of such a model but not a satisfactory one. A model is needed through which the effect of some action can be seen. Development of such a model and its application to the multitude of the world problems, of which compilation is also one of tasks the center team should act, should be one of main targets of the center team.

3. Detailed Study on Limiting Factors of the World

MIT team studied limiting factors of the world but did not discuss much on possibility of replacing one into another. For example some organic resources such as plants, which can be recycled, may be used in future in place of some metals. An detailed survey on future possibility of such replacement will be useful to see the ultimate limit of the world.

4. Study on the 'equilibrium' state of the world

If 'stopping growth' is a premise the world should obey, what the 'equilibrium' state means is still under question. What distribution of the materials is truly a stable pattern ? What is the standard of 'value' ? What is the objective of life ? Such questions should be answered if the 'equilibrium' state is the goal the world should go to.

TENTATIVE RESEARCH PLAN OF THE FIRST YEAR

In case that the team in Geneva has three or four researchers involving economists and system scientists, both of whom have knowledge of statistics, the first and the second of the items described before will be main items of the research of the first year. A possible schedule is in the following.

	1. DISTRIBUTED WORLD MODEL	2. CHARACTERIZATION OF WORLD PROBLEMS
2-3 months	Survey of studies on relations between developed and developing countries Determination of the frame of the model	Compilation of the world problems
4 months	Determination of the parameters of the model Simulation Run	66
2-3 months		Development of the methodology
3 months	Survey of other approaches Publication of the Report	Characterization of the problems

DR. AURELIO PECCEI

MAY 20 1971

C-R 1033
ANNEX 3

Rome, April 19, 1971
DAP/amp

Dr. Jermen M. Gvishiani
Vice Chairman of the State Committee
of the USSR Council of Ministers
for Science and Technology
11 Gorki Street
Moscow.

Dear Dr. Gvishiani:

Our meeting in Paris the other day was rather short. Therefore we could not follow up the conversation we had in Moscow on March 22, in which a program for a visit to the Soviet Union by some of the prominent members of The Club of Rome was envisaged. You suggested that the visit should include, besides the State Committee of the USSR Council of Ministers for Science and Technology, the Academy of Sciences and a number of Institutes interested in world affairs or in scientific approaches to the problems of modern society, both in Moscow and in some other places. And that therefore at least 3 or 4 days should be considered.

I have in the meantime asked my colleagues and we are suggesting to you the week starting Monday July 12 of this year. Our group will be formed by myself and 3 to 5 other people, which we will select among the following (all, except the last one, members of our Executive Committee, and most of whom you already know):

- Dr. Alexander King
Director General
Organisation for Economic Cooperation
and Development
Paris
- Dr. Saburo Okita
President
The Japan Economic Research Center
Tokyo
- Dr. Ing. Eduard Pestel
Professor and ex-Rector
Technische Universität
Hannover

./.

- Dr. Hugo Thiemann
Director General
Battelle Institute
Geneva
- Professor Carroll Wilson
Massachusetts Institute of Technology
Cambridge, Mass., USA
- Professor Dennis Meadows
Director of Phase One of our Project on
'The Predicament of Mankind' now being
developed at MIT and which will be finished
by next June.

The scope of the visit will be:

- (a) to illustrate how Phase One of the Project (called 'Dynamics of Global Equilibrium') was conceived and carried out by an international team of young scientists working at the MIT in contact with a large number of International Organizations and experts on the different problem areas which were considered relevant for the dynamics of world situations;
- (b) to summarize the main conclusions and recommendations derived from this study, even if they may at this stage be of a tentative or indicative character only;
- (c) to explain how more advanced research is being conceived for the next phase, or Phase Two, of The Club of Rome effort, which will very likely be organized in a polycentric form, namely with a steering committee and coordinating activities in one center--probably Geneva, where some research will also be carried out--and a network of interrelated studies and research carried out from different viewpoints or with different motivations, scope or methodology in different parts of the world, such as Japan, Germany, France, USA, Canada, Latin America and other developing areas, etc. These various studies may be either reciprocally dependent or independent, provided however that they fit within the world's overall context as studied during Phase One--this being due to the overwhelming consideration that our contemporary shrunken world is one of inter-dependences among regions and interactions among problems and phenomena;

- (d) to examine the possibility of Soviet participation in and contribution to our Phase Two--which will be highly welcomed by all of us. This is a point that we would like you and some of the leading members of the Academy of Science to consider seriously, because we are convinced that transnational and transcultural cooperation at global level is today necessary jointly to detect the reason for the crisis which affects the systems of human society practically everywhere in the world and which calls for a common effort to devise new approaches and new policies.

In order to organize our visit to the Soviet Union, I would like you kindly to tell me if the week of July 12 is a satisfactory period, as I hope (due to the difficulty also on our part of finding a suitable period for all concerned), and to have an outline sent me of the program that could be organized in your country.

Looking forward to hearing from you I am,
with kind personal regards,

Sincerely yours,

Aurelio Pececi

bcc: ~~Dg.~~ Savoretti

MAR 23 1971

RESTRICTED TO CLUB MEMBERS

18. 3. 1971

THE CLUB OF ROME CONVOCAATION

Seigniory Club, Montebello, Quebec, April 4 to 6, 1971.

ANNOTATED AGENDA

(compiled by Aurelio Peccei)

(More than an annotated agenda, this is a list of topics which have been discussed during the last year or so in our midst. Members may wish to express views about them during the Discussion Periods or the Informal Meetings on April 4 and 5. Of course, many other subjects may be dealt with as Members will decide).

1. The Club Concept. The CoR was conceived as an informal group of independent people fairly eminent in their own disciplines or activity, and therefore generally busy; who, therefore, although particularly sensitive about the welfare and future of mankind, cannot dedicate much specific time to this extra activity. Therefore, the Club may be likened to an 'invisible college' whose members are prepared to give their intellectual or scientific contribution individually or by small groups, as need or occasion requires. Any suggestions to improve this pattern?
2. Organization. The CoR is totally informal. In Rome a tiny Secretariat and in Geneva and Tokyo office points have been offered, at no cost to the Club, respectively by Italconsult, the Battelle Institute and the Japan Techno-Economics Society. The Secretariat keeps members informed of developments when they occur (communications of this sort are bound to increase substantially in the future), receives suggestions from them, and answers their questions. The Tokyo office maintains very useful contacts in that country. The Geneva office so far has mainly hosted ExCom meetings (but during Phase Two its activity is also likely to increase). Are similar office points desirable in some other places? Who can provide this kind of help? Or is there some other organizational improvement to be considered?

3. Membership. Membership is acquired by cooptation (decision rests with the ExCom). As in any free society, there is a flux of incoming and outgoing members. Presently their number is 61, and a maximum target of 100 has so far been envisaged. This number is considered sufficient to assure representativity and effectiveness in relevant areas and fields, and probably represents a maximum if communications are to be kept manageable. However, it has to be noted that some of the members are scarcely active, or dormant; which fact has prompted the suggestion that the two categories of membership considered in the Statutes (members and associate members) should be enacted in the near future. What do Members think about all these membership questions?

4. Transcultural and Transdisciplinary Character. Present Members are a mixed group. By regions, there are: from North America 16; Western Europe 29; Eastern Europe 1; Japan 4; Latin America 6; Africa 2; Asia 3. And their main fields of activity are: 21 in science, 12 humanities, 7 economics, 21 managerial and other. These classifications are approximate; and they have little meaning anyhow, because it is the Member's personality which counts. However, they may help Members to suggest in which direction they feel membership should be expanded. And of course suggestion of possible candidates and steps to approach them are welcome by the ExCom from all Members, in Montebello or by mail.

5. Executive Committee. Presently its members are Alexander King, Saburo Okita, Aurelio Peccei, Eduard Pestel, Hugo Thiemann and Carroll Wilson. As opposed to what occurs with other Members, the demands on those on the ExCom are rather exacting. All of them travel a lot, and they meet as frequently as they can. The ExCom feels that it should increase its number (by cooptation) particularly to benefit from the contribution from other cultures, and that it should also step up its activity in the next phase of the CoR. The opinion of Members and their suggestions would be very useful on these subjects; and also on the function or tasks they would like to see the ExCom accomplish.

6. Assembly of Members. When the assembly of the current year in Montebello is over, the groundwork must be done to prepare

the following one. Of course, the conclusions and recommendations which emerge from this convocation will have to be taken into account, as will also the nature and spread of activity the CoR is likely to conduct in the next year or so. It would be opportune to consider when and where the next general convocation should be held; if the present format is satisfactory or should be changed; and any other suggestions that the experience, judgment and inclinations of Members may provoke.

7. The CoR Activity. It has been generally said that the CoR activity is oriented in two main directions: one of research and one of implementation. On the one hand, it wants to promote a greater insight into and a more valid appraisal of the conditions of mankind in a rapidly changing world, so as to establish intelligent guidelines for action; and, on the other hand, it aims at disseminating this body of knowledge and perceptions as widely as possible among all relevant human groups and decision centers, ultimately to influence the conduct of human affairs in a more rational and humane way. These formulations are also contained in the Statutes of the Club. Can these thoughts be improved? Or their language sharpened?

8. The 'Predicament of Mankind' Project. Although essentially a research Project, it was considered that it could give more vigor and expressivity to the Club's entire action. In other words, it was started as a first step toward the accomplishment of two main objectives: (a) to acquire and diffuse a real in-depth understanding of the present critical state of human affairs and of the narrowing and uncertain perspectives and options which are likely for the future if present trends are not corrected; and (b) to recognize and propose new policy guidelines and patterns of action capable of redressing the situation and keeping it under control.

For many reasons, including practicality, it was decided to carry out the Project by phases. Now that Phase One is nearing its completion and that Phase Two is being roughly outlined, do we consider the formulation hereabove satisfactory for the whole of the Project, or should it be modified?

9. Phase One's Specific Objective. This is to bring out by a simulation model of the world the modes of interaction of some of the principal

variables which make the present global situation so difficult and confusing. Much has been said about modeling, pro and con, as a means to represent reality. Criticism and praise have been raised by 'system dynamics' as the proper technique in this field, and Jay Forrester is probably ready to offer any explanation which may be required. In the many discussions we had on the use of this methodology for Phase One and on the relevancy of the results one can obtain there was wide concurrence that this had been the right step to take, and that the work being done would be a meaningful contribution to the understanding of the world macro-problems. If doubts exist in this respect, a clarification should be sought in Montebello.

10. Discourse on the Information Bases. The data input for the 'World3' model has been drawn from the best available sources existing with international organizations and centers of excellence. To select in their mass the most appropriate information bases, and also to review and revise the logical structure of the model's sectors, extensive contacts were maintained with recognized authorities in the different sectors (population, natural resources, pollution, etc.). In the matter of a few months, immense ground had to be covered. This may explain some of the flaws and imperfections of 'World3'--a prototype model anyhow--which in further models can be eliminated. Dennis Meadows is going to illustrate all this. Will Members give their constructive criticism on what has been done, express judgment on the whole of the work, and offer suggestions better to organize in the future the data input?

11. Phase One Conclusions and Recommendations. What Phase One will yield in the way of conclusions and recommendations can probably be already envisaged in Montebello. The outcome of Phase One will not only provide a touchstone for the worthiness of the CoR-VW-MIT effort, but establish the basis for the credibility and authority of further efforts in this field. We have received encouragement in this respect from the interim meetings held so far. However, the matter is so important that a great deal of attention has to be paid to it in Montebello by all Members. And judgment or opinions are expected of them, both on the substantive aspects of the final Report to be presented (reliability of the simulation, its significance, how the outcomes should be interpreted, etc.) and the way these reports should be presented.

12. Diffusion of Phase One Report. The results of Phase One must be made known, the more widely the more significant and convincing they are. The CoR has authorized Dennis Meadows to publish a book about the work he has directed. But, apart from this, the CoR must envisage many activities (some of them in coordination with VW) to disseminate and illustrate its own conclusions and recommendations, such as:

- publish and diffuse the final Report and comments thereon--in what way and form?
- hold conferences, seminars, round-tables, etc. in many parts of the world to illustrate work done and results obtained; some of these events to be organized in conjunction with international bodies (ECOSOC, OECD, ECE, FAO, UNESCO, WHO, etc.) or other institutions interested in these problems (JTES, Battelle, CEDIMOM, Science Policy Foundation, Europe 2000, etc.);
- make communications to or publish articles in mass media and specialized publications;
- address or make visits to decision centers.

The contribution and participation of as many members as possible both to design this activity and then to carry it out is indispensable for its success. The groundwork should be laid down in Montebello.

13. Phase Two Outline. Phase Two is only in a preliminary stage of conception. The ExCom has dedicated much attention to it, but in Montebello it can present only some tentative ideas and orientations, not yet a preliminary blueprint. As some of this work has been centered in Battelle, Hugo Thiemann will make a presentation of it. However, as many Members, and also outside friends, are taking a deep interest in it, it is expected and hoped that there will be very many constructive contributions and ideas from all Members, particularly on its substantive contents.

14. Phase Two Organization Pattern. One important, though only logistic-administrative, aspect of Phase Two is that it will very likely be organized in a polycentric form, namely with a steering committee and coordinating activities in one center, which will probably be Geneva (where some research will also be carried out), and a network of interrelated studies and research carried

out from different viewpoints or with different motivations, scope or methodology in different parts of the world, such as Tokyo, Hannover-Mannheim-Berlin, Paris, Sussex, Ottawa, MIT and other points in the USA, Mexico and other points in developing countries. As the advantages of this polycentric approach, as well as the far greater difficulty it entails are probably evident, Members should express their views about it.

15. Suggestions about Coordinated Polycentric Research. To facilitate discussion on the above, some suggestions have been examined for the Phase Two CoR coordinated network of research efforts, such as:

- to bring the 'World3' aggregated world model from the prototype stage to that of a more advanced tool;
- to disaggregate the integrated world system into interlinked subsystems by means of functional or problem-oriented submodels (dynamics of population growth, of waste generation or other pollutions, of resource depletion, of urbanization, of the industrialization process, of employment-unemployment, etc.) or regional submodels (industrialized vs. non-industrial nations, or free market, centrally planned and less developed countries in Latin America, Asia and Africa, etc.);
- to survey in depth the present and future world macroproblems (their morphology and dynamics);
- to refine the information basis and inputs (e. g. the reliability and sufficiency of measurable elements, use of social indicators, and also of spiritual variables);
- to introduce in the simulation modeling the adoption of innovative goal-oriented policies (such as international division of labor and production, massive population control, extensive disarmament, etc.);
- to analyze how the decision-making processes function concerning world macroproblems, and how they should be improved;
- to refine and better adapt the present system dynamics to the world macroproblems, and to survey the state of art of methodology in order to acquire also other techniques;
- to review the possibility of creating a World Forum or Commission on the World's Future.

Members should advance suggestions on how this possible combination of various centers and many topics could be organized,

and what part they could take in this effort in either the preparation or implementation of Phase Two.

16. Macroproblems: Their Urgency and Intensity. (Topic proposed by John Platt). This topic concerns the CoR's entire activity. The view is expressed that mankind is facing crisis problems which are much more serious and nearer the danger point than even the most concerned people think. This calls for a mobilization and organization of efforts similar to that which is enacted when a state of emergency vitally threatens a community-- only that now it must be envisioned at world level. An expression of this viewpoint is the asserted need for 'a kind of general staff for humanity', scanning and implementing corrective measures for our total predicament. There is certainly much to be said for a decisive action to meet squarely at world scale a mass of problems which every year grow more intractable and threatening. The questions to be examined are multiple, including how fast the world is precipitating toward a crisis, and if and how the CoR can be a rallying point to suggest adequate responses even before its planned action (Phase Two, etc.) can have time to develop.

17. Problem of Knowledge Utilization. (Topic proposed by Donald Michael). The question is what processes need to be set in action by or through the CoR to have the conclusions and recommendations of Phase One (and later on of work being done or conclusions reached in Phase Two) actually taken into account in the policy making and decision making contexts. The contention is that methods indicated in point 12 and others normally envisaged are never enough. Particularly when major shifts in values and viewpoints are suggested or implied that go against deep-seated habits or interests, as will be our case, experience shows that they will be met not by rational, open-minded acceptance, but by rejection, filtering or delaying and obstruction, till they are finally defeated. In Montebello we must discuss these viewpoints and examine what the CoR should do right away and efficiently to put across its messages.

18. Education as the Key Problem. (Topic proposed by Paul Weiss). There is little doubt that any effort to diffuse and implement the

CoR ideas or to establish an embryo of 'global management' institutions or planning is hampered by the appalling unpreparedness of the world population to the kind of awareness, behavior and life that the new problems confronting them are imposing. This issue is connected with the two previous ones. An unprecedented effort, it is suggested, should therefore be made to parallel any contemplated action model by an immediate planning or prospecting effort in the arena of education. The immediate objective is to study what needs to be done to raise a citizenry that would be receptive and responsive to the new demands on changes of aspirations and attitudes to which the systems approach to world problems will expose them. Members are requested to consider this unfathomable problem and express their views on what attitude or action is suitable for the CoR in this respect.

19. An Analytical Breakdown of Our Problems. (Topic proposed by Yoichi Kaya). A way to approach and understand our problematique and to contribute to the general effort of facing it is to analyze what are, in the real world, the main problems confronting us. This may be done by a survey of the main events actually occurring in our societies and which may have considerable effects on the system's behavior or may become critical, with a view to finding the variables dominating these events, and the relationships among them. With the insight so acquired into the problematique, one can then look for policies effective in avoiding future crises. This approach is proposed, as a part of the CoR total effort, by a Japanese work team created ad hoc in Tokyo, with the purpose of contributing particularly to Phase Two activities. A paper will be available and a presentation made in Montebello, to allow Members to express views and suggestions on how this approach may better fit into the CoR total effort.

20. Limits and Improvements of Process Dynamics. (Topic proposed by Jeremy Bray.) Among the many methodological suggestions advanced this proposal may be considered, which is aimed at improving the methods for estimating dynamic equations for systems undergoing structural change. Its scope is to offer an aid particularly to current political decisions more than help establish a framework for understanding the general problems of mankind. It is accompanied by remarks underscoring the necessity

of interaction and a perpetual learning process interlinking analysts and policy makers. A paper will be available in Montebello for Members wanting to express ideas on this matter.

21. Contacts with International and National Organizations. Various degrees of cooperation have been received from, or contacts have been established with, a number of international Organizations, such as ECOSOC, OECD, ECE, UN Conference on Human Environment, FAO, UNESCO, UNIDO, IBRD, WHO. During Phase Two these contacts will no doubt become more intense. Which suggestions have Members to make.? The same thing applies to some national Administrations and Agencies. The relationships with them have to be considered in each national context.
22. Contacts with Non-Governmental Organizations. A number of contacts with outside organizations which are interested in problems of mankind or the future have been kept up, though not systematically. Some of these organizations are:
- Cedimom
 - Science et Vie
 - Futuribles International
 - Institut de la Vie
 - Institute for the Future
 - Center for the Study of Democratic Institutions
 - Simulation Councils Inc.
 - Southern Illinois Un. (Carbondale)'World Game'
 - Hudson Institute
 - Aspen Center for Humanistic Studies
 - Salk Foundation
 - Overseas Development Council
 - Resources for the Future
 - Institute of Man and Life
 - Harvard Center for Population Studies
 - Other Harvard and MIT entities
 - Parliamentary Group for World Government
 - Japan Techno-Economics Society
 - Fondation Européenne de la Culture
 - Max Planck Gesellschaft
 - World Law Fund
 - Int'l Association for Cultural Freedom
 - World Council of Churches
 - Int'l Institute for Applied Systems Analysis (IASA)
 - Int'l Social Science Council (Vienna)
 - Foundations (generally)
 - Interfoundation
 - Pugwash

The unsystematic nature of the CoR relations with them is due to many factors, including lack of time, a general confusion of reference terms and bases and overlapping of aims, their more limited interests or motivations (as none of them is really interested in or active about the long-range world macroproblems), etc. However, some more definite links and collaborations should be established, at least with some of them. Can Members express some suggestions about which line of action, generally or specifically for some of these organizations, should be followed? And can some of them volunteer some personal contribution for the action the CoR should develop?

N. B.

This document is only an aid for discussion, and has not been cleared with the ExCom.

Prof. C. Wilson

MAR 16 1971

MEMORANDUM

TO: The Executive Committee of the Club of Rome

FROM: E. Pestel, see also memorandum by V. Giarini of December 18, 1970

DATE: March 11, 1971

SUBJECT: Phase II of the Club of Rome Research Program

Club Rome

Following the completion of the present project (first phase), carried out by the Meadows-group on behalf of the Club of Rome, I see the following courses of action to be pursued in the second phase:

(1) Further Study of the Problematique on the Global Scale

This would be a continuation of the present work carried out at M.I.T., however, with a refined model possessing a lower level of aggregation, for example, disaggregating the level population into population of highly industrialized countries and population of the less developed countries.

I believe this type of work could only be carried out at the M.I.T., where the necessary experience is available.

(2) Investigation of Submodels

This work could be done in decentralized fashion. It appears at present possible to set up besides M.I.T. centers in Japan and Germany, where some capacity for doing work in System Dynamics is available.

The submodelling work could be divided into two sections:

- (a) regional comprehensive submodels,
- (b) problem-oriented submodels.

Concerning (a):

Regional comprehensive submodels should cover, as far as levels and rates are concerned, the same problem areas as the global models so far. However, the work should then be confined to certain regions, for example:

- West-Germany
- West-Germany and the Common Market
- United States
- United States and Canada
- United States and Latin America
- Latin America
- Japan
- Russia
- etc.

Concerning (b):

The establishment of certain problem-oriented submodels is already under way at M.I.T. I refer in this respect to the models on Solid Waste Disposal by J. Randers, on A Dynamic World Reserve Index by B. Behrens, and the forthcoming model on employment by E. Zahn.

Other submodels could be developed e.g. for the following subjects:

- Employment in underdeveloped countries (for example West Pakistan);
- Employment in industrialized countries (Germany including foreign labor, Italy as labor-exporter, England without foreign labor);
- Solid waste for various materials;
- Natural resources reserves;
- Energy (nuclear and fossil; global and regional);
- Crime and Crowding;
- Urbanization;
- Transportation;
- Pollution (international relationships, for example in the European community, or lead effects by USA);
- Productivity, Employment, Leisure, Social security, Education, and Participation;
- Political system and material standard of living;
- Natural resources and industrial development in the less developed countries;
- Social effects of stable population;
- Effects of social and technological phenomena with long lags;
- etc.

(3) Translation of Political Measures in Changes of Table Functions and Parameters by Means of Simulation Models

The development of submodels is intended to serve as a guide for political action such as to arrive at optimal equilibria for the various levels of our models. However, the simulation models in their present form are not prepared to accept political measures as inputs. Such political measures will be defined by certain financial, economic, or legal policies which e.g. in the democracies are accompanied by parliamentary delays.

It appears necessary to find, possibly by means of simulation, a computerized method that allows to have political measures reflected in changes of table functions and parameters that serve as inputs into our submodels.

At present there are submodels available concerning solid waste disposal, a dynamic world reserve index, and possibly soon a submodel on employment in agriculture and industry. One should start with these submodels and try to superimpose on each of these submodels, as an upper hierarchic stage, a model that would translate political measures which could be taken in a certain country, for example in a highly industrialized country like the United States or in an underdeveloped country, into changes of table functions and parameters that would reflect these political measures. Then we would have a tool which would enable politicians to probe alternative political measures and to learn whether in the long run their measures would actually lead to improvements or not.

To develop such translation models would in my opinion constitute the first step towards the establishment of the instrument DEMATEL as envisaged by Dr. Giardini.

Of course, in the future also such translation models would have to be refined, because political action takes place in more or less sequential fashion and is governed also by the feedback from the situation as it evolves due to certain political measures.

Financing

As far as financing is concerned I believe that it would be increasingly difficult to obtain funds such that the Club of Rome could finance these projects in various places in the world, for example also at M.I.T. I rather believe that it will be necessary that the various centers that will work in the future in this area, be it here in the United States at M.I.T., be it at a certain German university, be it in Japan, or in other places, would have to obtain their own financing, for example, through national foundations. The Club of Rome would find one of its main tasks in the coordination of these decentralized efforts and in the evaluation of the results in order to influence the future course of political life in the various countries.

It would be, of course, very good if the project listed under No. 3 could be carried out at a "neutral" place like Geneva, because it is quite apparent that political measures that lead to the same changes of table functions and parameters would be quite different in countries of different political and economic structure. And it would be here in Geneva that we could bring together political figures from the most different countries that would test their intended political actions on our models. Here we would go a great step further than the Institute of the Future by confronting the political actor with realistic models. If it were

not possible to obtain funding for this project in Geneva, the development of the translation device could also be carried out at other centers, and Geneva would then serve only as the application base for such political games.

E. Pestel



Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

Club Rome

February 8, 1971

Dr. David Robinson
Carnegie Corporation
589 5th Avenue
New York, New York - 10017

Dear Dr. Robinson:

I have just spoken with Professor Carroll Wilson. He described your interest in our project for the Club of Rome and invited me to participate in your luncheon meeting in New York, February 23. I regret that prior commitments on the West Coast will prevent me from attending. I would like, by letter, however, to answer some more specific information on our project. Professor Wilson is sufficiently acquainted with our team members and the general scope of our work to fill you in on the background.

You asked whether implementation of corrective policies in 1950 rather than 1970 would have made any difference in the outcomes reported by Professor Forrester. The simplest answer is no. If the results were so sensitive to timing, the model would, of course, have very limited utility. Errors in our current understanding of real-world relationships certainly do not permit an accuracy of plus or minus ten years in a simulation run covering 200 years.

The reasons for this insensitivity are largely beyond the scope of this letter. They derive, however, from the feedback loop structures which act in all social systems to yield dynamic stability. Negative feedback loops, as you know, are homeostatic or goal-seeking, and they exist in all our technological, biological, physical, social and political systems. Like the classical thermostat-furnace negative feedback loop, they adhere to an implicit goal in the face of many changes in their environment. Tomorrow's temperature in a room served by a good thermostat and furnace depends little on exactly when you open a window today. Similarly, enacting most policies in World2 ten years earlier alters the ultimate outcome very little. Furthermore, the size of the oil burner, or the amount of insulation on a house over a wide range of variances, has no influence on the temperature as long as a negative feedback loop control exists. In a similar fashion,

decaying cities, or underdeveloped economies, persist in their behavior despite our best efforts to influence them. There are too many feedback loops inherent in each system. Our approach at M.I.T. is to identify and model those loops. The resulting models are, like the actual systems, relatively insensitive to changes in the values of most individual parameters. In general, however, there will be a few sensitive points in each system. By analyzing these feedback models it becomes possible to identify effective policies which will change in concert with the inherent cause and effect relationships of a system.

The global model has been substantially revised since the preliminary version described by Professor Forrester. We have met with economists, demographers, pollution experts and others in Europe, in the United Nations, and in American companies and universities. No information so far available to us, however, would lead me to alter the general conclusions presented in the Congressional Testimony.

- The underdeveloped countries cannot realistically aspire to achieve our levels of consumption even for their present populations. It is even very doubtful that the U.S. can sustain its current level of material standard of living.
- The current rates of exponential growth in population and capital cannot be long sustained. I firmly expect our generation to witness the beginning of global equilibrium.
- If we enter the 1980's without a realistic economic, political, and technological plan for achieving the mode of equilibrium we most prefer, growth will be stopped by natural forces: pollution, resource shortages, or some other factor. Any solution imposed by nature will be traumatic and will profoundly alter our current civilization.

I did not dream ten months ago that our research for the Club of Rome would lead to these conclusions. To check the basis of our work, we have initiated a set of sub-studies to test the validity of various sectors in the global model. We are currently developing detailed dynamic models of population growth in traditional societies, of the relationship between technological advance and natural resource utilization, and of the economic and physical determinants of pollution generation. We are also undertaking a substantial study of the Green Revolution's nutritional and social implications.

Robinson
page 3.

These sub-studies each address a specific, important, short-term policy issue. They are thus justified in their own right. Each gains enormously from the overall perspective afforded by the global model. Each will contribute to our understanding of that larger system. An early description of the population study is enclosed. A rough draft of the natural resource-solid waste model is also included. This was written by a foreign student, so I will ask you to overlook the writing style until an edited copy is available.

An important asset in our work is the support we have received from professionals in many related disciplines. Faculty members of the Harvard Center for Population Studies are personally involved in population aspects of our work. Personnel at the Harvard Development Advisory Service have adopted our study on the Green Revolution as their research project for the spring term. Several professors in the M.I.T. Electrical Engineering Department have initiated a study of long-term energy prospects which will be carried out in close cooperation with our own effort. Because the vocabulary of our systems analysis approach is quickly taught to any professional, it is possible to bring different disciplines together in constructive discussions of the important cause and effect relationships relating global economic development and population growth. System Dynamics provides a new, interdisciplinary language specifically suited to computer simulation analysis.

We are assembling at M.I.T. a group of extremely capable and dedicated scientists who are profoundly concerned about the deteriorating state of our nation and the globe and who want to use their tools to shed light on our long-term options. The problems inherent in engineering an orderly transition to equilibrium are awesome. The expectations of growth are so much the basis of our psychological, political and economic activities that profound changes will be required. Insuring that they come without trauma will require efforts which must ultimately constitute a significant fraction of our national effort, an effort which should begin now. Until the inevitability of equilibrium is firmly accepted, and we have begun to identify our feasible alternatives, most attempts at national development in the United States and the less developed areas will be self-defeating. These are strong words, but I believe firmly in the importance of the work we have undertaken. I hope the ideas here and in the enclosed documents may generate sufficient interest to give me an opportunity of meeting with you at your convenience to discuss our activities more fully.

Cordially,

Dennis L. Meadows

DLM:jm
Enclosures: Population Dynamics
Solid Waste
cc.: Professor Carroll Wilson

1/27/71

Prof. Wilson:

Here is a copy of the telegram sent to Dr. Quishiani. The telegram was sent yesterday afternoon (Tuesday, Jan. 26.)

Judy Machen.

JAN 28 1971



Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

January 26, 1971

Club Rome

Dr. German M. Gvishiani
U.S.S.R. State Committee
for Science and Technology
Gorky, 11, Moscow
U.S.S.R.

CONFIRMING WILSON'S CONVERSATION MOSCOW. CORDIALLY INVITE
YOU SEND OBSERVER IMMEDIATELY PARTICIPATE REMAINDER OF PHASE
ONE, CLUB OF ROME PROJECT, M.I.T. ENDING JUNE 71. CAN PAY
LIVING COSTS WHILE HERE IF YOU CAN PROVIDE TRAVEL AND
COMPENSATION. ON ACCOUNT OF SHORT TIME REMAINING BELIEVE
MAXIMUM VALUE TO YOUR FUTURE RESEARCH IN SYSTEM DYNAMICS
MIGHT RESULT IF CONVENIENT TO SEND DUDIN. HE IS ALREADY
FAMILIAR WITH M.I.T. AND SYSTEM DYNAMICS. WE ARE PREPARED
TO ARRANGE STATE DEPARTMENT FORMALITIES WHEN ADVISED BY
CABLE OF YOUR DECISION. REGARDS.

FORRESTER AND WILSON

CARROLL LOUIS WILSON
MC 29 BOX 54 F2094

Club of Rome: Correspondence, 1971

2/2

OK

PRESENTATION

The Club of Rome, a group of private citizens from all continents, concerned with the increasing menace of the many interrelated problems confronting humankind, invited the System Dynamics Group of the Massachusetts Institute of Technology, in August 1970, to undertake a study of the trends and interactions of a limited number of factors which threaten our global society. This research is part of the broader project The Club of Rome will carry out in the coming years on 'The Predicament of Mankind' as a contribution to a better understanding of the different alternatives for the future which face all peoples and nations at this crucial turning point in human history. The MIT study, generously funded by the Volkswagen Foundation, is aimed at defining explicitly the physical limits and constraints to human multiplication and material activity on our planet - hence its title : 'The Limits to Growth : A Global Challenge'.

The Report of this group of scientists is now available, and we are pleased to present it to the public and to policy makers. Its conclusions indicate that mankind cannot persist in proliferating at an accelerated rate and considering material development as its main goals, without meeting a barrier to this process; that we have the choice of either seeking new aims in order to take our destiny into our own hands, or of submitting to the inevitably crueler consequences of unchecked growth. The Report provides material to support those who are already concerned about the present course of events and the values which sustain it, and offers to those who have different opinions or information the opportunity to ^{challenge} ~~disprove its~~ findings and statements. We are convinced that this document should be considered with the utmost attention and invite critical discussion. ✓

Certainly, deeper research and scrutiny as well as ^{better inputs are} ~~more reliable~~ information is needed before a firm base for decision may be established. However, even at this stage in the research, it is clear that some basic changes are needed in our philosophy of life and in our behavior.

To start the dialogue, we describe here the reasons that led the Club of Rome to commission this initial project.

The Human Condition

For millenia man has struggled upward from subsistence, and throughout this period technology, however crude, has been his main agent. Fire, the wheel, the plow, rudimentary metallurgical skills - these and other techniques - led to a settled agriculture, the establishment of cities and the emergence of a whole series of craft industries. The industrial revolution was a critical point in this development and led to the explosion of activity, ugliness and wealth which became the threshold of the world we now know in the so-called developed countries. Science greatly accelerated the process by laying bare the nature of matter and the physical laws, thus paving the way to a whole range of science-based industries, mechanical, chemical and electrical, whose products are commonplace today and form the basis of the present materialist society of consumption and waste which prevails in one part of the earth. At the same time the majority of mankind, living in the remaining regions, although involved in this whirlwind of change, has only marginally benefited.

In the meantime, there have been spectacular ^{studies} advances in

scientific research. The immense expenditures allocated to it in all industrialized countries provide a rich and expanding repository of knowledge, from which still further extensive new technological development is certainly emerging, with enormous, but dimly perceived consequences for the future of society. We must recognize the outstanding success of science and technology in producing an upsurge of prosperity and economic growth to a level unprecedented on our planet; it has augmented and enriched our food supplies, lengthened our lives and brought health to millions, and provided them with leisure. To past generations, this would appear as a golden age.

But science and technology, with all their advantages, have also been the main contributors to the complexity of the modern situation, to the extraordinary growth in population we are now experiencing, to pollution and the other unpleasant side effects of industrialization. We have no wish to return to the situation of a few centuries ago when population growth was checked by starvation and disease, but we have not yet learned to control the present. And, lacking a clear view of our desired future, we do not know in precisely what direction to guide the enormous force which scientific and technological research represents - a force which has the potential of progress or of destruction.

At this point, then, of near attainment in man's age-old struggle upward from poverty, disease and the enslavement of work, disillusion and doubt have crept in. We begin to perceive that in our technological society each advance makes man more impotent as well as stronger, each new power gained over nature appears to be a power over man as well. Science and technology have brought us the threat of thermo-nuclear incineration as well as health and prosperity; population increase and

the drift to the cities have led to new and degrading types of poverty and imprisonment in a squalid urbanism, often culturally sterile, noisy and degrading; electricity and motive power have lessened the burden of physical work but have leaked away satisfaction in that work; the automobile brings freedom of movement but also fetishism for machines and poison in the cities. The unwanted side effects of technology are all too obvious and constitute a threat, which could become irreversible, to our natural environment, individuals are increasingly alienated from society and reject authority; drug addiction, crime and delinquency are on the increase; faith is on the decline, not only in religion, which has sustained man for centuries, but also in the party political process and the efficacy of social reform. All these difficulties seem to be growing with affluence.

Therefore, although emphasis is still on the desirability of increasing production and consumption, in the most prosperous nations there is a rising feeling that quality is draining from life, and the basis of the whole system is being questioned. At the same time, the situation in the less developed regions of the world is even more preoccupying. Here the contrasts are even sharper between the expectations raised by the magic of modern technology and the small share these populations can glean of a progress which elsewhere seems so glittering. Thus, in the wake of scientific and technological progress, intolerable psychological, political and economic gaps have appeared, which oppose the 'haves' and the 'have-nots' of the world. Further aggravation of this state of affairs would make political explosions well-nigh inevitable.

In this time of rapid change we have thus come to realize that man is a creature who understands, however dimly, his origins and who has some power over his own future, but who lacks any real sense of

direction. Technology has vastly increased and extended his physical powers, but seems to have contributed little or nothing to his reasoning or wisdom. Organic evolution, with the millenia required for the emergence of healthy new species through mutation, can no longer apply to this situation of man; he has reached a point when he must work out an entirely new path of cultural evolution.

The World Problematique - Symptoms and Disease

Under these conditions, men everywhere are increasingly confronted with a range of strangely intractable and elusive problems - deterioration of the environment, the crisis of institutions, bureaucratization, uncontrollable urban spread, insecurity of employment, alienation of youth, rejection by an ever larger proportion of people of the value systems of our society, inflation and other monetary and economic disruptions, to mention only a few. These seemingly diverse problems have three characteristics in common. Firstly they have world-wide dimensions or impact, and appear at certain levels of development in all countries irrespective of the social and political systems in force. Secondly they are complex and multivariant with technical, social, economic and political elements. Finally, they interact strongly among themselves in a manner we do not yet understand.

It is this intertwined cluster of problems which we term 'the problematique'. The interrelations are so basic and have become so critical that it is no longer possible to isolate from the tangle of the problematique any single major issue and deal with it separately. To attempt this only increases the difficulties in other and often unexpected parts of the mass.

For the same reasons, no nation, not even the biggest, can hope to solve its own problems if those threatening the global system remain unresolved. Our customary methods of analysis, approaches, policies and governmental structures, all fail when faced with such complex situations. We do not even know what the future or indirect consequences of our current, alleged 'solutions' will be. This then is the 'PREDICAMENT OF MANKIND': we can perceive the individual symptoms of the profound malaise of society, yet we are unable to understand the significance and interrelationship of its myriad components or diagnose its basic causes, and hence are unable to devise appropriate responses.

It is these considerations and the need to seek new responses which led The Club of Rome to initiate its project. Our concern is for the future of mankind, which knows so much, has accomplished so much, but with so little wisdom and sense of direction. We believe that the time has come when it cannot avoid facing up to a situation which is the culmination of consequences that have been building up rapidly during a unique period of extraordinary and disorderly growth - of population, technological and scientific achievement, and economic performance.

We are convinced that our present socio-political organization, short term outlook, fragmented approach, and above all our present systems of values, are unable to deal with the modern problematique, ever more complex and global, or even to comprehend its true nature. Profound changes must be made to redress the world situation before it is too late. They cannot be started in the right direction, unless we understand how the new realities confronting us differ from those which faced man in past centuries and millenia and shaped his biological and psycho-social evolution; how these have been transformed through his

own manipulation, and, essentially, how the new hybrid, part-natural, part-manmade realities that now condition life on our planet really work.

The MIT Project

The first step in any scientific endeavor is to recognize and try to formulate precisely the problem to be attacked. The first objective in The Club of Rome approach to the world problematique, was hence to explore more in depth its nature, dimensions and dynamics. In order to do this, a search was made for formal analytical methods which could integrate rationally the many variables which requires to be investigated in order to arrive at an overall assessment of the current world situation. After several months of discussion and enquiry, one specific method was selected, namely that of System Dynamics developed by Professor Jay W. Forrester at the Massachusetts Institute of Technology. This technique, evolved originally for the analysis of industrial problems, had already been applied to the investigation of many other complex systems, including those of urban decay, internal medicine and social problems.

In view of our needs, Professor Forrester developed a preliminary world model, incorporating some of the most important relationships underlying the complex of critical problems previously identified by the Club. This approach appeared to have considerable promise for simulating the interaction of some of the principal variables inherent in the system which the world problematique represents. On this basis, the Volkswagen Foundation made available financial support which enabled an interdisciplinary team of scientists from different countries to be

assembled under the leadership of Professor Dennis L. Meadows.

An important advantage of the System Dynamics technique is that it makes possible a representation of world relationships, pictorially or mathematically, in terms quickly learned by everybody. Sophisticated mathematical ability is not a prerequisite for understanding, contributing to, or using the results of this system dynamics study. Thus demographers, economists, government leaders and others interested in the problematique should be able to evaluate and apply the results readily in their own fields.

The main task of the MIT research was to explore in a world context the interdependencies and interactions of five critical factors: population growth, food production, industrialization, natural resources depletion, and pollution. This required the selection of a set of assumptions concerning the relationships amongst the individual elements, supported by existing knowledge of the real world. Advice was sought from many outside experts with regard to specific aspects of the model's structure and the validity of input data. This could not eliminate a certain degree of subjectivity--although, we feel, no more than in the mental models that currently guide human decisions.

on the MIT Project

A full Technical Report will be available in March 1972, ~~anyhow,~~ ✓ with detailed reference and comments on the input data and assumptions adopted, as well as descriptions of the techniques used, and information on the computer runs carried out. And a number of fine-structured sub-studies have also been prepared, on particular problem areas, and are the subject of special papers.

In presenting this general Report, which summarizes the research

JWF

done, its findings, the preliminary conclusions and observations it has suggested to those who have undertaken this singular effort, we wish publicly to express our deep appreciation to Dennis Meadows and all his colleagues for the contribution they have made to the understanding of the new and difficult situations we must collectively face in our changing world. At the end of this volume we will indicate how the expectations we entertained when we asked MIT to carry out this research have been fulfilled, and we will give our interpretation of the significance of the Report in the framework of our general project on 'The Predicament of Mankind' as things stand at the end of 1971.

November 1971.

Alexander King

Saburo Okita

Aurelio Peccei

Eduard Pestel

Hugo Thiemann

Carroll Wilson

Dennis Meadows
MIT
Cambridge, Mass.

Balzac Hotel
Geneva
20 October

Dear Dennis:

I have been busy following up our discussions at MIT. You will have received via Jane my suggestions re Ch IV. She has boiled down and toned down the "Presentation" which Alex & Aurelio will put in final form while together in London tomorrow. It plus slightly revised "opinion" now called Commentary will be circulated to Ex Com. for final OK.

The central issue which emerged from my discussions with Aurelio, with Hedra of Stockholm who was at Bellagio, in long telephone conversations with Hugo and Edward Bertel was the absolute necessity that Chapter III spell out the basic assumptions put into the model and a clear identification of those which are based on recognized data sources and those which are arbitrarily chosen. You have from Edward his letter of a week ago spelling out what

CLW to -2- Dennis Meadows
20 Oct

he considers essential and why. Hugo in his marginal comments on the draft and extensive discussion with you in Moscow has made clear what he considers necessary.

As a result of these discussions and a number with others I share the view that the central and most important part of Ch I - ~~II~~ on ~~II~~ is Ch III, and that the rising level of attack centers on the absence of an explanation of the inputs into the "black box" (Dynamics language & model design). An important motive of this whole scheme is that the input assumptions can be made explicit and understandable to the layman.

Thus the revision of Ch III ~~and~~ to make these matters explicit (at least Hugo's, if possible Edward's) becomes a *sva qua rion* for the book.

I know that Aurelio is very anxious to have the book appear in January - he fears we will be

C HW to — 3 — Dennis Meadows
20 Oct

"scooped" by Nixon's State of the Union message. The rest of us consider the timing secondary to meeting in a satisfactory way the revision of Ch III.

You must estimate how long it will take to fix Ch III — Hugo felt that 2-3 pages of explanation should do it — Edward feels that the table functions used should be included.

There continues to be unhappiness with Ch III (text + outline is all we've seen) as a Chapter in the Report. You must consider whether you want to be judged as a scientific study which includes such personal opinion crystal ball gazing into the future.

Members of the Ex Com expect to see and be satisfied with final text before it is given to Patamae to use as copy for the book. Perhaps you will find it easiest to get final text of Ch I II IV & V in mail soon with Ch III and Specs to follow when ready.

I am staying at Hotel Balzac, Pl. de la Navigation, Geneva (Cable Balzacotel, Tel (022) 31.01.60 probably until 29 Nov when I return (an 1/2) via UK.
Sincerely — Carnall

THE CLUB OF ROME

Rome, October 27, 1971

DAP/amp

NOTE FOR: Dr. Alexander King
Dr. Saburo Okita
Dr. Eduard Pestel
Dr. Hugo Thiemann
● Prof. Carroll Wilson

US Edition of 'The Limits to Growth: A Global Challenge'

1. Both Carroll Wilson and myself have been in contact with Dennis Meadows in pursuance to the decisions and suggestions emerged during the ExCom meeting of Paris on October 4 and the following two days. There is some delay in the preparation of the final texts by Dennis and Dana Meadows, but I had yesterday ^{by Dennis} on the phone the following time schedule: Introduction, Chapters I, II and V to be completed by October 30 (practically without any change with respect to the text we have already on our hands); Chapters III, IV and VI (or the Conclusions, equivalent to VI) to be completed (but not 100% sure) by November 7, and then sent to ExCom. For sake of expediency I hope you are willing to rely on Carroll for any last minute corrections, as he has been in contact with all of us (except Okita) and has received our suggestions.
2. Apparently, there is very much intervention in this final stage of the Report by Jay Forrester, who, though not having official roles, has strong influence on Dennis. And Dennis does not appreciate, as for instance I do, the necessity of not delaying the publication of this Report--which should have been ready by July or August, but which will be practically out only in January 1972. All the place around is swarming with books, articles, comments, interpretations etc. of the world situation according to the lines that we have spearheaded, and there is wide mention also of the MIT project, but this Report is a kind of Phoenix which never appears. My comment is not intended to be a criticism, because I know the intelligence and accuracy with which the Meadowses are working, but I feel that we really fall behind the stream of events.

./.

Secretariat:

- Rome: Via Giorgione 163, 00147 Rome - phone: 5107 - telex: Tecnital 61497 - cables: Romclub

Offices:

- Geneva: c/o Institut Battelle, 7 route de Drize, 1227 Carouge, Geneva - phone: 439831 - telex: Batel 23472 - cables: Battelle
- Tokyo: c/o Japan Techno-Economics Society, Masuda Building, 4-5 Iidabashi, 2-Chome, Chiyoda-ku, Tokyo - phone: 2635501

3. There is also a problem of copyright, because Dennis believes it belongs to him, and I believe it belongs to The Club of Rome. But this is a marginal point which I think we can straighten up when I will go to Boston.
4. Carroll Wilson and I arranged that I will go to Boston Tuesday November 2 and that he and I will stay that afternoon and evening with Dennis to review all these matters and possibly to arrange all the details for the US publication. The following day, Wednesday 3, we may meet in the morning also with Jay Forrester. In the afternoon, the Meadowses will leave for a two-week California trip. I hope, however, that in the subsequent days the matters with Potomac Associates can be settled.
5. Jane King has revised the ExCom Presentation and Commentary trying to satisfy the observations made by ExCom members. She prepared a new Draft of the text, which was further revised by Alex King and then re-read by him and myself last week in London. I made to it a few corrections to have the text coordinated with the Report. The Final Draft is enclosed herewith. Actually you will find three parts. One is the Cover and Table of Contents as I understand they will be (the indication of Potomac Associates has to be added). The second is our 'Presentation'. The third is our commentary, which is now called 'The Significance of the Report' and which will go at the end of the Report. There are also two boxes, one 'The Club of Rome' and the other 'Toward a New Phase'. Please read this Final Draft and if you have any comments or modifications let Jane King (possibly copy to me in Rome) have them, so that our Final Text can be readied by the 8th or 10th of November: Alex will finally okay it.
6. If all this runs smoothly, it is possible that by the middle of November all the texts of the book--the MIT part and the ExCom part--are ready and by the 20th of November in the hands of Potomac Associates. This will hopefully permit them to have the book out and available to the public (and the personalities to which it will be directly mailed) by the end of January. This is a target date we should not postpone in my view.
7. This also means that at the beginning of December a full text can be given to those who need it for the translation in the

various languages which, according to the latest information, so far are: Japanese, German, French, Italian, Spanish, Portuguese, Serbo-Croat. It is possible also an English edition to be distributed in the UK.


Aurelio Peccei

Encl.

Dear Carroll:

As agreed, I am sending a copy of this note to your address in Geneva (with two sets of annexes) and one in the US if the first one should arrive late. If you can revise the enclosed texts before leaving Europe, please let Jane have them in Paris.

Cordially,


Aurelio Peccei

October 8, 1971

Professor Dennis L. Meadows,
E 40/214 Massachusetts Institute
of Technology,
Alfred P. Sloan School of Management,
50 Memorial Drive,
Cambridge, Massachusetts 02139
USA.

Dear Dennis,

I found your letters of September 13 and also of September 27, when I returned to Germany just twenty-four hours ago. I have not had the time to study them closely. So I can't say anything in reply just now. While in Paris on Wednesday, two days ago, I met with Aurelio and Alexander King. Aurelio handed me the last version of your report, however without a chapter three. I had intended to concentrate the last day completely on this report in order to send you my criticism. However, when I arrived, I found a very disturbing development concerning the new university law in Lower Saxony. So I had to write to several ministers and representatives of the governing party in order to make a last minute attempt to change their opinion. Therefore I can only give you my first impression in a few words as of now. I will try to use the week-end to study the report more closely.

Like you I received the comments from Professor Klages, which I also found quite helpful even though they were very critical. In the meantime I also received from Professor v. Kortzfleisch comments that were even more critical. I don't know whether you have received them in the meantime. So I will copy them and send them to you possibly with this letter. I think the criticism by Professor v. Kortzfleisch should be taken very seriously. I believe that much of the very favourable comments comes from people who have not read your report with a ^{very} critical mind. In this case I do not make any exemption of my own person. When I read the first version of the report recently again I also found practically the same things that v. Kortzfleisch is referring to.

The new version is certainly an improvement over the first as far as I can judge at present seeing also only the incomplete product. However, I think

in chapter one on "The Nature of Exponential Growth" one could just as well delete page 7 and the first paragraph of page 8 completely and just refer to the concept of doubling time. The insertion of the treatment of positive and negative feedback loops is certainly a great improvement of this section. Still I would try to avoid any redundancy and to tighten the presentation as much as possible. For example pages 16, 17, and 18 should for the most part be deleted.

As far as chapter two is concerned I am not sure from the first glance whether you have stated sufficiently clearly that the facts reported here are possibly not shared by others who were not quoted. However, I have not read carefully enough to make to you any definite suggestions for change in this chapter. In any case please consider the question whether this material has not been presented elsewhere in the same compact form. If this chapter should present for the first time all the relevant material concerned with energy pollution resources, food etc. in such compact and informing form I would have nothing against its inclusion.

The third chapter I have not seen, but I believe that this should be the ^{core} ~~call~~ of the report. I do not think that it is sufficient to explain the model in a little more detail with more emphasis on feedback loops. I think those table functions that have been found to be ^{very} ~~only~~ important in the sense that any change of them would make a marked difference in the behaviour of the model should be explained in the text giving the pros & cons. It was the consensus of Alex and Aurelio that chapter four "Technology in the Limits to Growth" should be out completely. At my present knowledge of the report I can neither question nor support the wisdom of this decision. However, I tend to believe that it would be best to include that material which deals with computer runs, i.e. page 5, 6, and 8 in the present chapter three, so ^{as} ~~there is~~ to strengthen this most important chapter. I think it might be worthwhile to back up these computer runs possibly in an appendix to the report also with the flow diagrams and some additional material that led to these computer runs. As to the rest of the chapter including "Social Side Affects", "The Choice of Limits", and "Needed Technologies" I am not certain that elsewhere deeper thinking has taken place by people that were not under the tremendous pressure of time and work under which you and your wife have to work.

Dear Dennis, this is as far as I can get today because my train is already waiting and I have to get back to Hanover from Bonn. Please, be not too disappointed at this letter, but I believe more than ever that your report that is to be framed by an introduction and a post^{face} of the executive committee of the Club of Rome has to be a scientific document that mainly reports on the work done by you and your teams. Even though it is to be written for the educated man on the street it has to stand up to criticism by other scientists. Therefore I do not think that more or less broad statements on social, economic, psychological, and demographic questions should dominate the report but the method and results that were attained by your team using systems simulation. Because only this makes our work so unique in the world at present it is the model, its structure and the computer runs which distinguishes your work from any other work that is at present at great numbers done all over the world. Therefore in order to represent clearly the uniqueness of our effort I believe that chapter three cannot be made strong enough.

In any case I believe that we should avoid to tread on thin ice where sociologists or other soft scientists of similar type have due to their one-sidedness the edge over us. Here we would just stick our neck out with giving certain facts where they can present others against it, while we can take certain convictions which they could match with other convictions where we can due to limited space and time only express more or less superficial interpretations which they could easily prove to be erroneous.

So much for today, Dennis. I wish I could come to Cambridge and sit down and work with you and Dena and the others for two weeks from morning till night, but unfortunately I am tied down here with so much work that I hardly see a chance for my coming over to Cambridge in the remainder of this year. Please accept my best wishes and my most cordial regards for you, Dena and my other friends,

always yours,

(signed in Prof. Pestel's absence)

Secretary

Enc.

M.I.T. - CLUB OF ROME

PROJECT ON THE DYNAMICS OF GLOBAL EQUILIBRIUM

MIT Project
for the C o R

Limits to Growth

November 1, 1971

Dennis L. Meadows
System Dynamics Group

Preface

Since World Dynamics was published in June 1971, the M.I.T. team has released a series of reports on various phases of the Club of Rome Project on the Predicament of Mankind. Most have been technical in nature and have dealt with a specific facet of our attempt to determine the nature and implications of five processes which have global significance: population growth; economic development; resource depletion; food production; and pollution generation. This paper, designed for a wider audience, provides more general information on the project. It describes the Club of Rome, the derivation of their project at M.I.T., and the history and nature of System Dynamics, the analytical methodology used in the study. The problems addressed by the M.I.T. team during this past year will require the best efforts of the M.I.T. staff and associated groups in other countries for many years to come. However, preliminary results are already available and the broader conclusions appear unlikely to be reversed by further work. Thus, this paper concludes with a brief description of the central validating effort and of the conclusions to which it has led.

THE DYNAMICS OF GLOBAL EQUILIBRIUM

L to b

Phase One in The Club of Rome Project on the Predicament of Mankind

Introduction

For the last four thousand years the condition of the human race has been characterized by growth and change. Technological development has accelerated. Natural resources have been diminished. Our environment is being polluted at an ever-increasing rate. Population has multiplied at least 50-fold in that period and it may double again within this century.

Material growth cannot continue indefinitely on a finite planet. Current rates of growth cannot be sustained for another century. We are faced with an inevitable transition from world-wide growth to global equilibrium. Because of the time delays inherent in social system change, decisions made now are already influencing the nature of that future equilibrium. Will it be an equilibrium in which the deterioration of our environment and the depletion of important resources have risen to stifle growth? Or will mankind anticipate its limits and move into an orderly accommodation with them? The shift from growth to global equilibrium may be initiated by catastrophes such as wars, starvation, or epidemics.

Alternatively, transition could result from an enlightened, concerted, international effort to adopt new values, define new goals, and implement new institutions. We can perceive the individual symptoms and the components of profound social problems, but we have been stymied in our efforts to comprehend the total situation and to develop global solutions. While perceptive individuals have begun to recognize the inevitability and the

potential dangers of a transition to equilibrium, thinking and action have been confined to individual problem areas. Demographers press for effective birth control measures. Ecologists seek an end to the destruction of our natural environment. Agricultural experts search for more efficient food production. All would admit that there are important interactions among their various approaches, but the conceptual framework, the analytical methodologies and the vocabulary to unite the different fields have been lacking.

Recognition of these deficiencies by Dr. Aurelio Peccei and others led to the formation of The Club of Rome and to its plans for an action-oriented program on the 'Predicament of Mankind' to develop a scientific, multinational basis for concerted action on global problems.

The Club of Rome

The Club of Rome is a group of approximately seventy individuals deeply concerned about the future of the world and the looming problems which threaten human society. The Club is informal, multinational and non-political. Its members include scientists, humanists, economists, educators and business leaders. While many of its members serve as advisors to governments, the Club itself has no ideological, national, or cultural commitments.

Many organizations, national and international, have been formed in response to global problems. The special strength of The Club of Rome lies in its flexibility. Its membership is small and it is not pre-committed to any doctrine or to the welfare of any particular group or nation. It has been deliberately constituted to include representatives of many cultures, and the funds for its projects are derived from organizations and individuals in several different nations.

To carry out its program, The Club of Rome has been incorporated in Geneva as a non-profit association under the Swiss Civil Code. It maintains numerous contacts with key people in Ottawa, Moscow, Washington, Tokyo, Buenos Aires, Rio de Janeiro, Stockholm, Berne, Vienna and other capitals, as well as in the United Nations and other international organizations.

As a small organization, the Club recognizes its limitations in directly affecting significant global change. It views its role rather as that of a catalyst. It realizes that its program of research and information dissemination can succeed only if its achievements are sufficiently new and important that they attract a lasting group of adherents

from different cultures and various branches of scientific and political activity. To do that the Club seeks to adopt an integrated view of global problems and to provide the language, the methodologies and the criteria of success appropriate for their solution.

THE CLUB OF ROME PROGRAM: PHASE ONE

Before initiating the first phase of its program, The Club of Rome undertook a search for formal analytical methods which could integrate rationally facts and theories from the many disciplines required for any overall assessment of the current world situation. Meetings in Berne, Switzerland and Cambridge, Massachusetts in June and July of 1970 led finally to selection of one specific method, System Dynamics,¹ as the foundation of Phase One.

An important part of the conference work in Cambridge involved study and discussion of a preliminary System Dynamics model (World2) developed by Professor Jay Forrester. The model incorporates many relationships underlying the complex of critical global problems of concern to the Club and permits for the first time a final analysis of their long term implications. While it was not based on a formal analysis of data, the model was found to offer significant insights into the nature and consequences of exponential growth in population and industrial output. A description of the model and Professor Forrester's discussion of conclusions derived from it have been published as World Dynamics.²

Soon after the Cambridge meeting the Volkswagen Foundation, Hannover, Germany, authorized a grant to support the efforts of a research team at

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1. System Dynamics is a theory of system structure and a set of tools for representing complex systems and analyzing their dynamic behavior. Originally developed at M.I.T. by Professor Jay W. Forrester for application to industrial problems, these tools are widely known as Industrial Dynamics. Now, however, that name is a misnomer since the method has been applied to over a hundred different systems ranging from internal medicine to urban decay and the management of research and development projects.
 2. Jay W. Forrester, World Dynamics, Wright-Allen Press, 238 Main Street, Cambridge, Massachusetts, 02139, U.S.A., 1971.

M.I.T. to test and extend the initial model. An international group of ten scientists and students was formed under the direction of M.I.T. Professor Dennis L. Meadows to analyze the limits to growth and to evaluate alternative means of achieving an orderly transition to global equilibrium. The Volkswagen Foundation grant will support the efforts of the M.I.T. team through May 1972. While alternative sources of funding are being sought to continue the M.I.T. effort, the Club of Rome is working to establish parallel efforts in other countries. A Japanese team under the direction of Professor Yoichi Kaya at the University of Tokyo and a German team under Dr. Erich Zahn at the University of Mannheim have carried the goals and methods of Phase One into studies of particular interest to their respective countries.

METHODOLOGY OF PHASE ONE

The field of System Dynamics has been developed at the Massachusetts Institute of Technology through more than thirty years of continuous effort directed toward the analysis and control of complex system behavior. From its birth in the study of relatively simple mechanical systems it has grown to provide a single framework for understanding the behavior of electronic, chemical, biological and social systems whose elements interact through time to produce system changes.



One important advantage of System Dynamics for the Club of Rome program is that it represents real-world relationships pictorially or mathematically in terms quickly understood by everyone. Sophisticated mathematical ability is not a prerequisite for understanding and using the results of a System Dynamics study. Thus demographers, economists, governmental leaders and others interested in global problems will be able to apply the Phase One results readily to their own fields.


A detailed description of the System Dynamics approach is available in Principles of Systems.³ The main features of the global model, developed by the M.I.T. team, is briefly described here. It will illustrate the use of System Dynamics in understanding the characteristics of alternative global equilibria. Figure 1 is a flow diagram or pictorial representation of the assumptions in the model. The assumptions deal explicitly with the interrelations among the processes of population growth, economic development, natural resource depletion, pollution generation, and food production.

These interrelationships represent many important aspects of the real world.

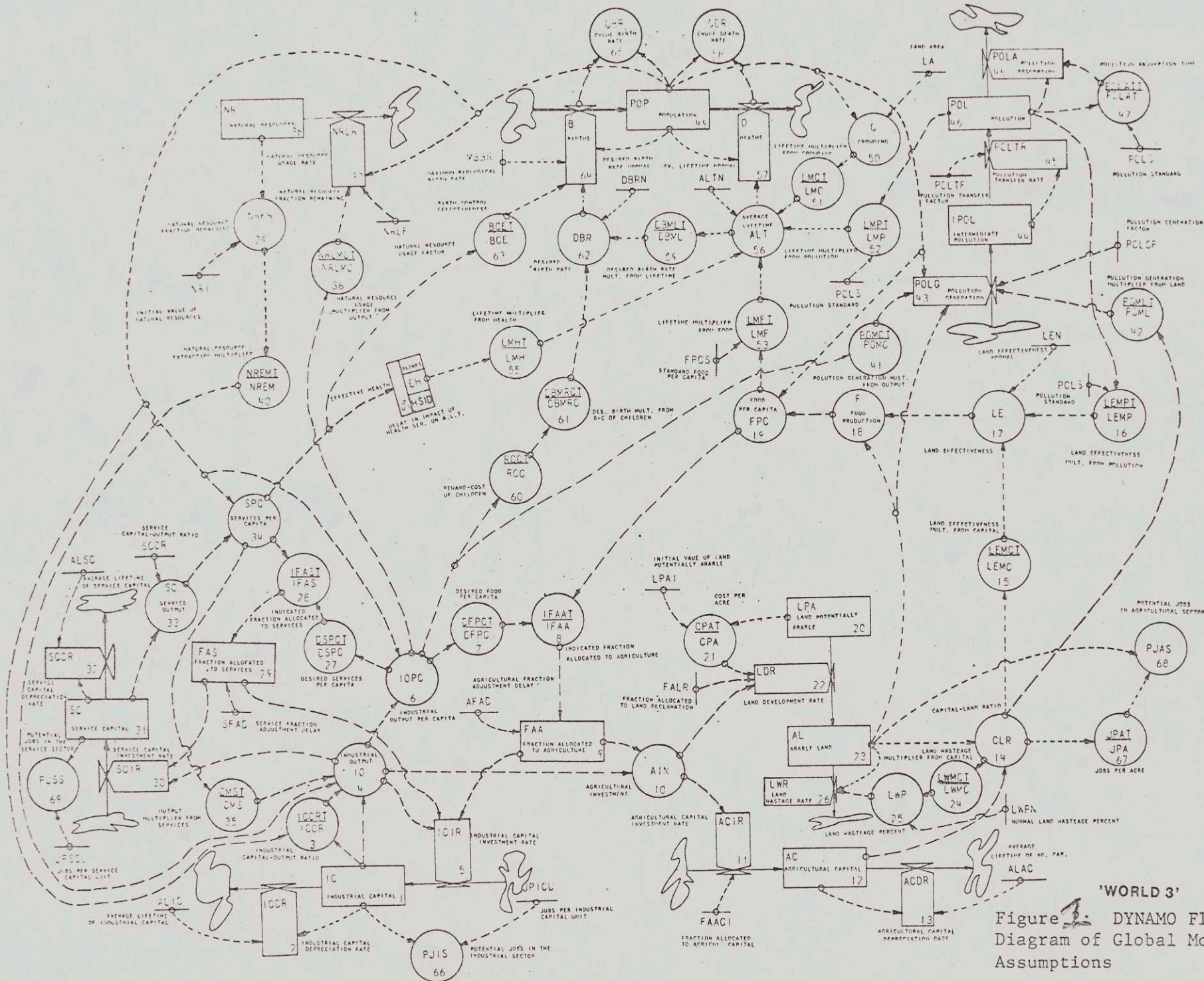
3. Forrester, J. W., Principles of Systems, Wright-Allen Press, 238 Main Street, Cambridge, Massachusetts, 1968.

Psychological factors influencing desired family size, biological effects of pollutants, physical determinants of capital depreciation and the economic influence of declining natural resource stocks are among the hundreds of factors which were considered in constructing the model.

Using the computer to conduct studies of model behavior requires that each assumption be expressed very precisely. According to the theory of System Dynamics only two types of variables, "levels" and "rates", are necessary to express any relationship in a system. Levels are the state variables which characterize the system at any point in time. Population, pollution, natural resources, capital investment and agricultural capacity (represented by the fraction of capital invested in agriculture) are five of the levels in this version of the model. All levels are represented by rectangles []. Model behavior depends on the quantity in each of those levels. Levels which are unimportant are represented by clouds [].

Rates are the system's action or policy variables which effect changes in the levels. Birth rate, death rate, pollution generation rate, capital investment rate and resource utilization rate are among the rates important in understanding global equilibrium. Rates are represented as valves []. In this model rates control flows of people, pollutants, capital equipment, land and other natural resources. These streams are represented by solid lines.

Since the rates acting on a level summarize all the biological, political, social, economic and other factors which act to change that level, they are generally complex expressions. Often one or more components



of a rate are sufficiently important to warrant individual attention. Called auxiliaries, these components are separated algebraically from the rate and represented pictorially as circles [O]. One such auxiliary is the lifetime multiplier from health which represents the influence of health facilities and education on the death rate.

Dotted lines in the flow diagram indicate influence in the direction shown by the arrows. For example, health, services, pollution and food all influence the average lifetime.

Whenever a sequence of influences leads back to its own starting point and thus forms a closed circuit, it constitutes a feedback loop. One important feedback loop is that relating health services and population. The components of that loop are shown in Figure 2.

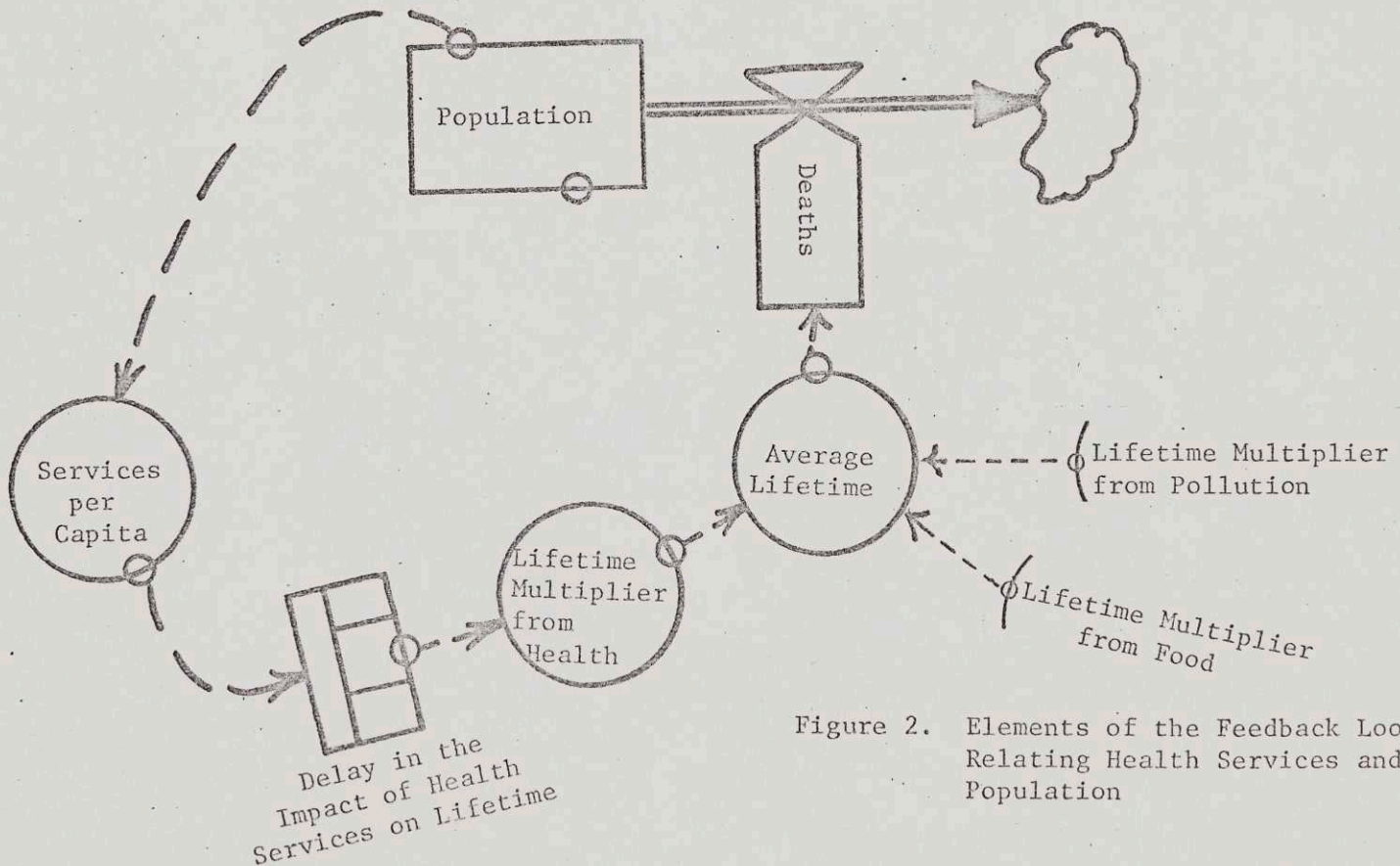


Figure 2. Elements of the Feedback Loop Relating Health Services and Population

This particular sequence of influences is a negative feedback loop. In any negative loop a change in one element sets in motion a chain of events around the loop which eventually produces a counter-acting influence on that element. For example an increase in services per capita increases the average health of the population after some delay. That decreases the death rate and thereby increases the population. A larger population has the effect, all else equal, of decreasing the health services per capita. Of course other factors will in general be acting simultaneously on each of the factors in this loop. They too can be represented and their effects analyzed in this manner.

Feedback relations may also be positive. In that case a change in one element is propagated about the loop to result ultimately in a reinforcing change in the same element. Usually each element in a system will be influenced by several positive and negative loops simultaneously. For example population is also involved in a positive feedback relationship with birth rate (Figure 3).

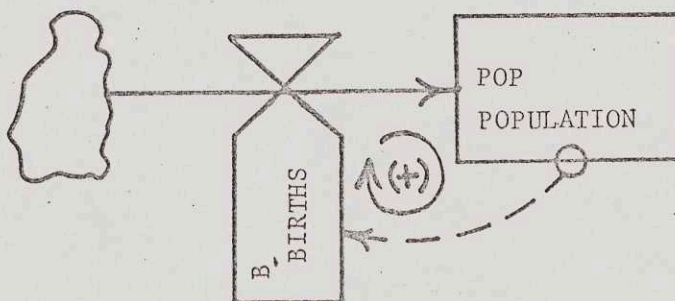


Figure 3: Population -- Birth Rate Feedback Loop

If population were suddenly increased, the number of people born per year would increase and thereby raise population even more.

Feedback loops differ not only in their polarity, positive and negative, but also in the delay with which their responses are propagated around the loop. The delays inherent in the second loop, shown in Figure 3, are about fifteen to twenty years. Delays in the former loop involving health and population may be thirty years or more. Thus it is in general very difficult to determine intuitively the exact implications of a given change for a particular level. An initial decrease in population might lead in the model above to either more or less population ultimately than if the decrease had not occurred. The final direction of the response would depend on the strength and the delay of relationships inherent in each loop where population is an element.

One dimension of mankind's current dilemma is that actions made to alleviate one problem often aggravate others. Intensive use of fertilizers, for example, does increase food production, but it exacerbates water pollution. Accelerated economic development raises material standards, but increases pollution and the depletion of natural resources. Many alternative approaches to improving the condition of mankind have been proposed. Birth control, development of more efficient crops, increased recycling of natural resources and changes in the societal values which govern investment in capital are a few examples. Some combination of these policies can be effective, but alternatives must be evaluated in the context of their total impact on all elements of our global society.

Basic Structure of the Global Model

Figure 1 is simply a detailed elaboration on several cardinal assumptions about the relationship among important elements of the global system. The interrelationships among 18 main elements of the world model are illustrated in Figure 4. As a greater fraction of industrial output is diverted from investment, the growth rate of capital decreases. Output may be diverted to consumption and services, to agriculture, and to military expenditures. As consumption and services increase, health and education improve, average lifetime becomes greater, deaths decrease, and population grows. The effects of this are ameliorated somewhat by the secondary influence of average lifetime on the birth rate, for a large fraction of mankind must rely on its own children for support in old age, and other important functions. As the probability of survival is raised through increases in the Average Lifetime, the desired number of children decreases and the crude birth rate declines.

Similarly, output may be diverted into agricultural capital which results ultimately in greater food production and thus a higher average lifetime. The primary determinant of the fraction of output reinvested is the output per capita. Where production per capita is low, most of the output must be diverted to consumption, services, and food. Those investments interfere with the accumulation of a large capital base, and at the same time, stimulate the growth of population. Population tends to increase much more easily than capital in traditional societies. Thus, a population with a low output per capita finds it very difficult to achieve economic growth.

Output diverted into military expenditures subtracts capital from the

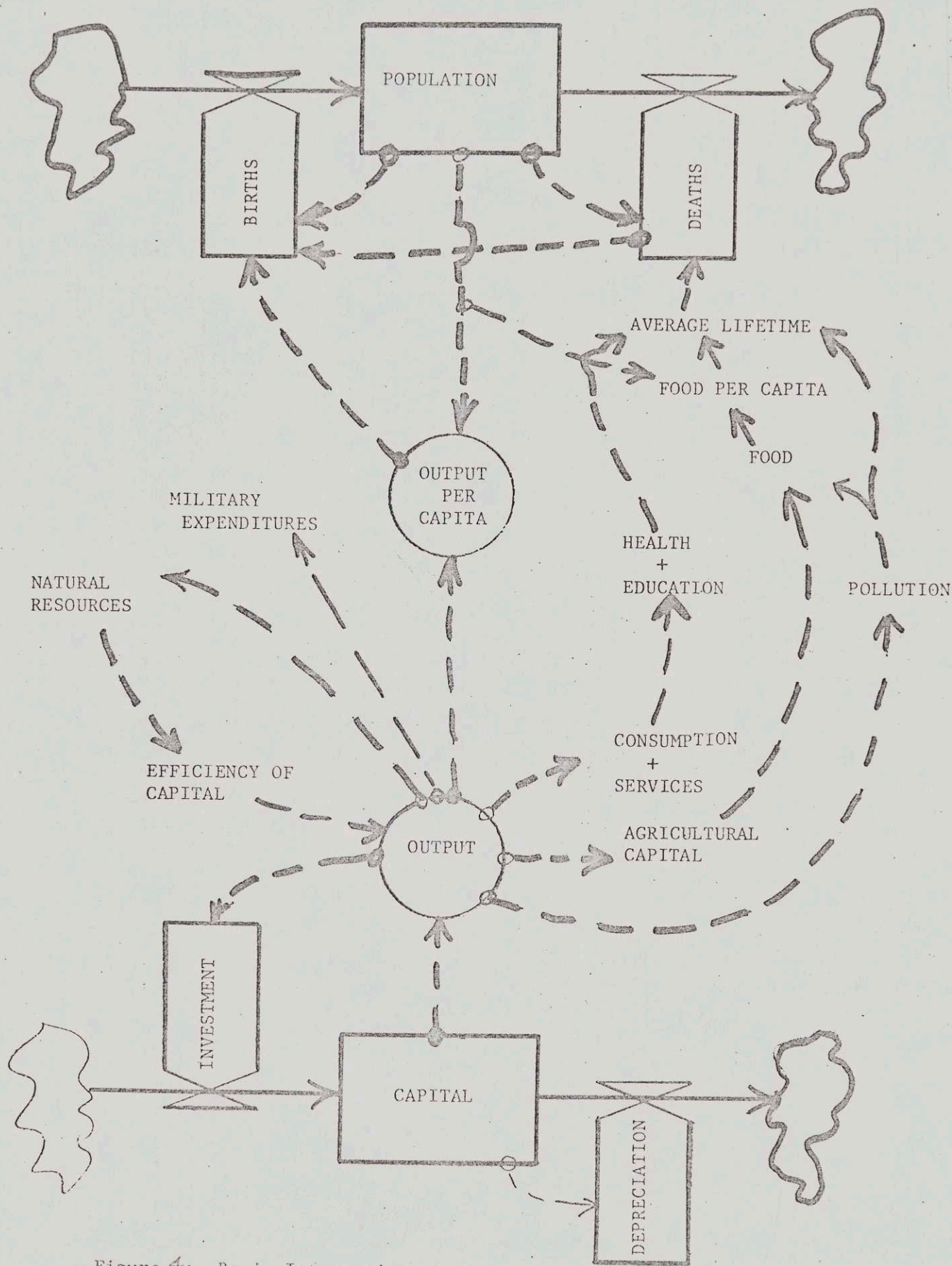


Figure 4: Basic Interactions Between Population Growth and Capital Accumulation

system and does not generate future growth directly, although it may have an indirect effect through the investment multiplier. Industrial output also leads to the depletion of natural resources. As the quality of natural resources declines, the efficiency of capital decreases because relatively more capital must be devoted to mining and transporting poorer grades of ore. Thus, the (output/capital) ratio decreases. As the output per capita increases the crude birth rate of the population tends to decline. This results from the complex set of social and economic changes which accompany industrialization. The impact of these changes on the maximum biological birth rate, the birth control effectiveness, and the desired family size are included in the model. An increase in output has one additional impact. Agricultural and industrial production generate pollution. Pollution has potentially negative effects on food production and on the average lifetime of the population.

Although the above statements are a great simplification of the global model, most global problems have important roots in this simple set of interactions. Consider, for example, the long term implications of the Green Revolution. Supporters of the program assume that an exogenous increase in food production capabilities of the less industrialized countries would permit less output to be invested in agriculture and thus permit more resources to be reinvested in capital, moving the process of capital investment into the phase of self-sustaining growth. A secondary argument has been that the increased food per capita would decrease deaths somewhat and thereby depress the birth rate through changes in desired family size as described above.

Those who criticize the Green Revolution feel another conclusion might be justified. The increased food from the Green Revolution might as easily

increase the food per capita, decrease the death rate, and leave population to grow very rapidly. Should this happen, the increase in population might be very much greater than the increase in capital. Output per capita could remain the same or even decline, thereby drawing a larger percentage of output into consumption and services and maintaining a stagnant economy.

The Green Revolution has been implemented only for four years. Thus, the resolution of this issue is still many years away. However, it is ironic that while billions of dollars were spent in massive modeling efforts to think through every future step of a program to land three men on the moon, no similar effort was made to understand beforehand the possible implications of the Green Revolution for our ability to maintain three and one half billion people on the globe. The global model is a first tentative step in the development of tools necessary for such analyses.

Preliminary Conclusions from the Global Model

The current version of our global model is based on the data found and summarized through twelve months of effort by the M.I.T. team. An enormous amount of research remains to be done. New relationships may be added to the model and our data will be refined. That work is already in process, but we doubt that subsequent research will significantly alter several basic conclusions.

1. If current trends are maintained, the technological and cultural progress we can expect in the next 60 years will not be adequate to sustain as many as fourteen billion people on our globe. Since the doubling time of population is currently 32 years and decreasing, this implies that population growth will undergo a profound

deceleration sometime within the next 60 years. The most important cause of that shift towards equilibrium will probably be a decrease in the average lifetime; not a decrease in birth rates.

2. Resource constraints and the structure of our current international political system imply that there is no possibility of bringing the vast majority of those living in the developing countries up to the material standard of living enjoyed by the industrialized nations, unless vigorous population control measures are soon implemented.
3. There is a strong probability that the western nations will witness a marked decline in their own standard of living within the next 3 or 4 decades, unless they too stabilize their populations and adopt much more conservative policies in their utilization of energy and resources.
4. There is no unique, optimal long-term population level. Rather, there is an entire set of tradeoffs between personal freedom, material and social standard of living, and the population level. Given the finite and diminishing stock of resources on this globe, we are inevitably faced with the necessity to recognize that more people implies a lower standard of living over the long term.
5. Pollution, starvation, resource scarcity and related problems are not isolated events to be studied and addressed individually. Each of them is a specific example of the negative forces which will inevitably grow to halt growth in any finite world. Growth in population and capital is sustained by a spectrum of extremely powerful forces-- personal, institutional and national. Negative forces will inexorably rise until they equal the positive forces. We can alter the mix of constraints but not the total sum. There is no utopia in our future. Our only choice is to identify ^{accept that} and ^{set} pressures most consistent with our long-term goals.

Extensions of the Global Model

It has become clear that a global model already can provide insights into the general nature of the limiting factors on growth and can provide an overall context for conversations and investigations about specific aspects of global problems. It can point very sharply to the necessary interface conditions which must be met by policies addressed to the problems in any particular problem sector. It aids in identifying the critical areas of effort. World3 has served all these purposes. A global model, with the degree of aggregation it entails, is not, however, sufficient for the formulation of improved policies.

To ensure confidence in the conclusions of World3 and to evaluate detailed policy alternatives, it has been necessary to examine in detail each of the five sectors: Capital, Food Production, Pollution, Population and Natural Resources. In substudies we have modeled certain social and political phenomena not specifically addressed by the global model. We have effectively undertaken a hierarchy of research studies. Analyses of the global model point to critical problems in each of the five sectors and the results of each substudy provide insights into the level of aggregation and the important factors which should be included in revisions of the global model. This hierarchy of research is portrayed graphically in Figure 4.

Project Publications

Many of the studies indicated in Figure 4 have already been reported in System Dynamics Group working papers. Others are in preparation. A 100-page general report, The Limits to Growth: A Global Challenge, is being

prepared to discuss at length the points raised in Conclusion 5 above.[#] It discusses the nature of various limits to growth and discusses the characteristics and implications of a stable equilibrium for our global society. A 400-page technical report on the world model, The Dynamics of Growth in a Finite World, is also under preparation. It gives all data and assumptions used in constructing the model. It also indicates important areas in which the initial analysis should be extended.

Conclusion

The fundamental objective of The Club of Rome is to understand scientifically the range of feasible options available to mankind over the next century and to determine the technological and the socio-economic changes necessary to guide our global society towards those outcomes most in consonance with our fundamental goals. The enormity of the task has certainly not been lost on those of us who have struggled with it this past year. Only the recognition of what is still to be done and of the urgent need for strenuous efforts by many independent groups from a wide range of disciplinary and cultural backgrounds leads us to describe our project and our preliminary findings at this early stage. Whether or not our findings are ultimately confirmed, we earnestly hope that the material reported here will stimulate the formation of other groups with a long term perspective and the resources to begin a sustained program of scientific inquiry into these issues.

[#] D. H. Meadows and D. L. Meadows, The Limits to Growth: A Global Challenge, Universe Books, New York, 1972.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

JUL 22 1971

REPLY TO
ATTN OF

I

Professor Abdus Salaam
Director, International Center
for Theoretical Physics
Trieste, Italy

Dear Professor Salaam:

You will recall that we had a conversation during your last visit to Washington regarding the possible participation of the Goddard Institute of Space Studies in an international fellowship program such as you proposed in the Bulletin of the Atomic Scientists in March 1970.

I am very pleased to say that Dr. Robert Jastrow, Director of the Goddard Institute, is positively disposed to such an arrangement, subject of course to working out the appropriate details.

Thus, we would have in mind to accommodate a limited number of research fellows, possibly five, sponsored as you have suggested, who would divide their time between their own countries and the Goddard Institute. Dr. Jastrow would wish that the research subjects of the fellows be chosen from the major research areas in the Institute's current program, namely, meteorology, planetary atmospheres, astrophysics, and cosmology.

I recall your mentioning a conference in October which might relate to this subject matter. Perhaps you can let me know how you wish to proceed from this point.

Kind regards.

Sincerely,

Arnold W. Frutkin
Assistant Administrator
for International Affairs

cc: Dr. Jastrow/GISS

JUL 20 1971

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OCT 4 1971

INTERDEPARTMENTAL

MASSACHUSETTS INSTITUTE OF TECHNOLOGY CAMBRIDGE, MASS. 02139

from the office of Professor Gordon S. Brown
Room 4-234

1 October 1971

Professor Jay W. Forrester
Room E40-214

Dear Jay:

Dr. Stratton telephoned me yesterday. The news was good!

He has Bob McNamara very interested in a visit here. His address is:

The Honorable Robert McNamara
President
International Bank for Reconstruction
and Finance
818 "H" Street, N. W.
Washington, D. C. 20433
Phone: (202) 477-2001, Ext. 2001

Mr. McNamara will try and visit during the second half of the month. The present international monetary crisis has him tied up at the moment. Jay Stratton suggests you write to invite him and perhaps follow up by phone.

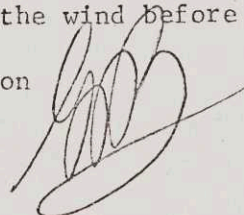
Jay Stratton says his colleague in the Ford Foundation who worries about population is becoming more interested and plans to visit us.

Jay Stratton wonders whether John Rockefeller would be following the Rockefeller Brothers Fund developments. He will be seeing John in a week or two and could subtly bring up the matter. He will respond enthusiastically if it will help.

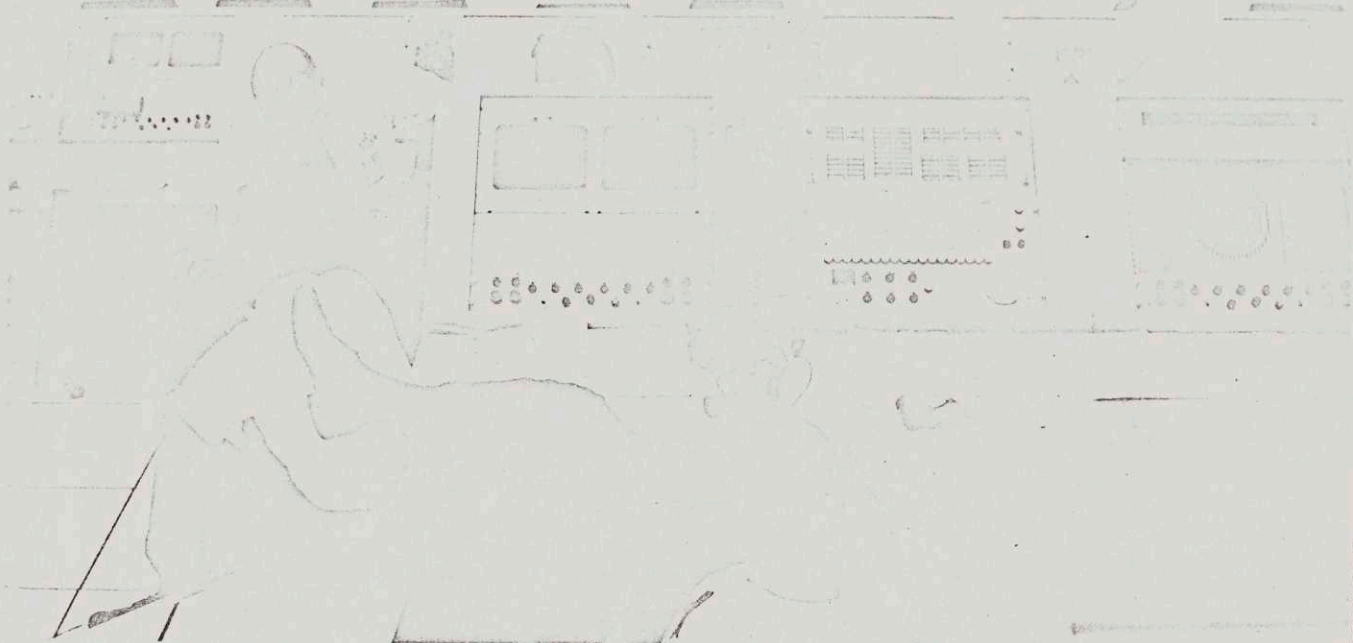
Westinghouse has decided they must get cracking on Forrester modelling. They have selected three top people from Research. They want to send them here for three weeks in the near future to get immersed in the philosophy and methodology. They need an input from us as to how to fund us. I suggested a grant -- avoid the semblance of tuition -- to stay out of the Bursar's hair. Jay Stratton said they need something that looks like value received to cover their own internal bookkeeping.

Jay Stratton will be at M.I.T. next week and will discuss all of this in greater detail. He apologized for the delay in reporting back to us but wanted to get the drift of the wind before barging in.

Gordon



cc: Professor Forrester's Home
Professor John F. Collins
Professor Carroll L. Wilson
Dr. Frank Davidson



Henri Cartier-Bresson

AU CENTRE SPATIAL JOHN KENNEDY.
L'informatique cesse de faire peur quand elle est en miettes.

VIE MODERNE

Faut-il brûler l'ordinateur ?

Il existe une société internationale pour l'abolition des ordinateurs. Fondée par un Américain résidant à Londres, M. Harvey Matusow, elle rassemble quelques milliers de fanatiques, qui s'emploient à saboter les cartes perforées, à effacer les codes magnétiques sur les chèques, à dérégler les systèmes de facturation automatique. Ce sont sans doute des originaux, des rêveurs. Mais ils constituent un signe : ils disent tout haut ce que beaucoup de gens commencent à penser tout bas.

Pour la première fois, l'an dernier, les vendeurs de la société I.b.m. n'ont pas rempli leur quota. Et, cette année, au XXII^e Sicob, le Salon mondial de l'informatique, qui se tenait la semaine dernière à Paris, en dépit du nombre des exposants et de l'afflux des curieux, le climat était maussade.

On invoque la crise monétaire, qui paralyse les affaires. Il faut bien trouver une explication. De même, aux Etats-Unis, quand apparurent les premiers symptômes de ce désenchantement, en 1969, on les attribua à la récession économique. Mais, depuis, des sociétés qui avaient les moyens d'attendre des jours meilleurs ont capitulé. General Electric a revendu son département informatique à un concurrent, R.c.a. vient de jeter purement et simplement l'éponge, passant par profits et pertes treize ans de

travail et 3 milliards de Francs d'investissement.

Rigidité. L'expansion des années 60, avec des taux de 25 à 30 % l'an, ne pouvait pas continuer indéfiniment. font remarquer les économistes. Il est normal que l'industrie de l'informatique prenne sa vitesse de croisière. Encore faudrait-il expliquer pourquoi cette soudaine prudence a traversé l'Atlantique bien avant que l'Europe ait rejoint le niveau d'équipement des Etats-Unis. Peut-on parler d'un simple assagissement quand vingt mille informaticiens américains sont en chômage, qu'en Angleterre ils trouvent difficilement un emploi, qu'en France la Cegos vient de licencier cinquante personnes de son département informatique ?

« Les fabricants ont vendu du vent, il est juste qu'ils récoltent la tempête », estime M. Pierre Thellier, président fondateur de la société de software Eca-automation. Il cite l'exemple du patron d'une grande industrie française, qui avait fait un voyage aux Etats-Unis à l'époque où la vogue de l'ordinateur battait son plein. Fasciné, il avait aussitôt acheté le plus puissant, le plus beau, le plus cher, pour le rapporter avec lui. « Comme les sultans arabes se payent des Cadillac. Il ne savait ni à quoi il pouvait servir ni même où il le mettrait. Rien d'étonnant s'il a été déçu. »

Le procès qui a opposé, au mois d'avril, I.b.m. France à un de ses clients, la Librairie Ernest Flammarion, illustre à merveille les déboires qu'ont connus trop d'entreprises, en France comme à l'étranger.

Flammarion réclamait 2 millions et demi de dommages et intérêts. Il accusait I.b.m. de lui avoir livré un ordinateur de capacité insuffisante. Au lieu d'améliorer la comptabilité, son arrivée avait entraîné de si graves désordres que Flammarion avait dû embaucher du personnel supplémentaire pour en venir à bout.

Le tribunal n'a pas suivi le plaignant. En effet, comme le précise le jugement : « Il n'y a pour ainsi dire pas d'exemples que la mise en route d'une facturation et d'une gestion de stocks par système informatique n'ait pas entraîné des difficultés semblables pendant des mois, et quels que soient les travaux de préparation... La direction de Flammarion n'aurait pas dû l'ignorer, et il est étonnant, par exemple, que, dès la mise en service de l'ordinateur, la facturation selon les anciennes méthodes ait été interrompue, sans que l'on ait apparemment songé à faire fonctionner pendant quelque temps les deux systèmes en parallèle. »

Le tribunal a également constaté que l'ordinateur était parfaitement



capable d'exécuter les tâches initialement prévues. C'était au client de se rendre compte que ces tâches ne correspondaient pas exactement à ses besoins.

Pourtant, I.b.m. a finalement été condamné à 1 Franc de dommages et intérêts ainsi qu'aux dépens. Attendu « que la proposition (d'I.b.m.) s'est tout à fait abstenue d'attirer l'attention de son destinataire sur les difficultés de démarrage d'un système informatique... Elle n'a pas souligné non plus que l'introduction d'un système informatique entraîne une rigidité plus grande dans les méthodes de traitement. En déclarant, au contraire, sans nuances, à la fin de sa proposition, que l'équipement mécanographique... apporte aux problèmes examinés... une solution efficace, rapide et sûre, I.b.m. s'est comporté avec légèreté ».

Densité. Il ne suffit pas de posséder un ordinateur, il faut apprendre à s'en servir. Et seuls quelques pionniers, qui n'ont pas le souci d'équilibrer leur budget, peuvent se payer le luxe d'un tel apprentissage. « Tous les grands systèmes, qui font l'admiration des spécialistes, comme le guidage des engins, la conduite des vols lunaires ont été réalisés à fond perdu, rappelle M. Thellier. Commander un ordinateur dans l'espoir de réaliser des économies est absurde. Ou simplement pour être à la mode, pour en mettre plein la vue aux concurrents. Il faut remonter aux origines. L'ordinateur est un outil qui permet d'accomplir des tâches dont le cerveau humain est incapable. On ne devrait faire appel à lui que si l'on a un problème qui ne peut pas être résolu autrement. Alors le prix ne compte pas. »

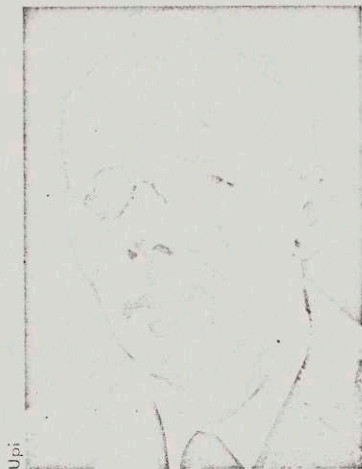
C'est une attitude d'aristocrate. M. Thellier peut se la permettre. Eca-automation, spécialiste du temps réel, est en train de préparer le contrôle automatique de l'espace aérien au-dessus de l'Europe du Nord. Le programme sera achevé vers la fin de l'année. Il faudra trois ou quatre ans pour le roder. Mais peu importe les difficultés : de toute façon, la densité des avions devient telle que, bientôt, l'homme, réduit à ses seules forces, ne pourra plus assurer ce contrôle.

Versatilité. A l'opposé, il y a la solution petite-bourgeoise. Celle de la prudence. Puisque le plus difficile, dans l'ordinateur, c'est l'art et la manière de s'en servir, on construit des ordinateurs qui marchent tout seuls. C'est possible, à condition de ne pas trop leur demander.

L'Allemagne a montré la voie. Aux Etats-Unis, avec I.b.m., en France, avec Bull, les constructeurs de matériel de bureau, facturières ou machines comptables, ont fait très tôt le saut dans l'informatique. Au contraire, les constructeurs allemands sont demeurés

longtemps fidèles à l'électromécanique. Ils n'ont fait appel à l'électronique que progressivement, pour améliorer les performances de leur matériel.

Ainsi, peu à peu, les facturières se sont vu doter d'unités de calcul, de mémoires magnétiques. Au début, pas de programme. Il était inscrit dans la machine elle-même, sous forme de circuit câblé. Une nouvelle étape est maintenant franchie : les constructeurs proposent des programmes interchan-



LE PR JAY W. FORRESTER.
Un malentendu.

geables, tout préparés dans des cassettes à bande magnétique. Quant aux données, on les introduit directement, en frappant les touches d'un clavier, sans avoir besoin de recourir aux langages spécialisés de l'informatique.

La Cegos, en France, a proposé, pour les machines de ce type, le terme d'ordinateur de bureau. D'une puissance et d'un encombrement réduits, elles sont avant tout destinées aux petites et moyennes entreprises, qui reculent devant l'achat d'un véritable ordinateur.

Les Allemands préfèrent parler de « moyenne informatique », soulignant, ainsi, qu'il s'agit de quelque chose d'intermédiaire entre l'informatique proprement dite et la machine de bureau classique. Ils en font une véritable doctrine, avec ses chaires d'université, ses congrès réguliers.

Ils ont sans doute raison. Car l'ordinateur de bureau n'est pas un modèle réduit d'ordinateur. De telles machines existent, par exemple l'I.b.m. 3 ou les Ge 55 et 58 de Honeywell-Bull. Elles ont justement été conçues par les grands constructeurs pour permettre à une nouvelle couche de clients, au budget limité, les petites et moyennes entreprises, de profiter quand même de toutes les ressources de l'informatique. L'ordinateur de bureau, lui, n'emprunte à l'électronique que sa vitesse, ses possibilités techniques. Mais il rejette la caractéristique fondamentale de l'ordinateur : sa versatilité, cette souplesse d'adaptation qui en fait une

machine théoriquement universelle, une sorte de cerveau artificiel.

Ce n'est pas une question de prix. Le Kienzle 6000, distribué en France par Innova, est un ordinateur de bureau typique. Or il coûte plus cher, en configuration complète, que les modèles les plus simples de l'I.b.m. 3. Et il offre, en théorie, au client, beaucoup moins de possibilités d'automatisation. Mais il suffit de quelques semaines de recyclage, à un comptable, pour se servir du Kienzle 6000. Tandis que l'I.b.m. 3, pour être utilisé à plein, exige un ingénieur-système, qui repensera toute l'organisation de la maison autour de la machine.

Popularité. On touche là du doigt deux philosophies. D'un côté, l'ordinateur est roi. Pour lui, de proche en proche, on refondra le service comptable, on remodelera l'organigramme de la firme, un jour il faudra transformer toute l'architecture sociale.



AU CENTRE SPATIAL DE HOUSTON.
Un rêve.

C'est le monde de la télélectronique, dont rêvent certains prophètes de l'ère postindustrielle.

De l'autre, il y a des hommes qui n'entendent changer ni leurs habitudes de pensée ni leurs méthodes de travail. Qui veulent bien faire un bout de chemin avec les techniques de l'informatique, pourvu qu'elles ne les dérangent pas.

Les auteurs de science-fiction ont popularisé l'image de l'ordinateur gigantesque, planétaire, installé quelque part en orbite, dans un satellite artificiel, et coordonnant, animant toutes les activités humaines comme le cerveau commande au corps. Chaque individu serait relié à lui, dès l'enfance, dès l'école, par son terminal

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personnel. Le développement, par les grands constructeurs, des techniques du temps partagé, de la téléinformatique, des réseaux d'ordinateurs, des banques de données paraissait aller dans cette direction.

Or le public, lui, est en train de choisir l'autre. La confiance des fabricants de « minis », au Sicob, contrastait vivement avec le marasme de la grande informatique. Ils ont déjà calculé que les ventes, en France, devraient être multipliées au moins par 3 ou 4 avant 1975. Les Allemands étaient convaincus que leur marché, déjà largement prospecté, continuerait de se développer. On parlait d'une offensive mondiale des Japonais, que seule la crise du dollar risque de retarder. On brossait le tableau d'un monde où chaque bureau, chaque boutique, chaque laboratoire, chaque atelier serait équipé de son unité de calcul indépendante, attelée à une tâche

captures, parce qu'on ne voulait pas passer pour un retardataire, un ennemi du progrès, mais qui s'affirme maintenant au grand jour, rejoignant la hantise de la pollution et la révolte contre un monde déshumanisé. Peur qui a même reçu, ces derniers temps, des consécration officielles.

Accueillant les délégués au V^e Congrès international pour le traitement de l'information, cet été, à Ljubljana, le maréchal Tito les a suppliés de penser au bonheur des hommes et de ne pas employer leur science à faire leur malheur.

Quelques jours plus tard, le président Georges Pompidou, recevant à Versailles les congressistes de l'Union interparlementaire, a fait publiquement état de la défiance que lui inspiraient les ordinateurs : « Les parlementaires se trouvent souvent en présence de textes que seuls des techniciens, travaillant avec l'aide de spécialistes de

La matière et son double

C'est officiel. L'antimatière, imaginée, prévue par les physiciens, existe. Elle est apparue, pendant une infime fraction de seconde, dans le grand accélérateur soviétique de Serpoukhov. Il y a plus d'un an, selon toute vraisemblance, mais la commission gouvernementale des découvertes et inventions a attendu la semaine dernière, toutes vérifications faites, pour rendre publique la nouvelle.

On sait depuis de nombreuses années que toutes les particules du noyau atomique ont leur antiparticule symétrique, de même masse, mais de signe inverse. Quand une antiparticule rencontre sa particule jumelle, elles s'annihilent mutuellement, pour se transformer en énergie. D'où la difficulté de fabriquer de l'antimatière.

Le tour de force des physiciens soviétiques donne un nouveau crédit à la thèse qui veut que l'univers, à l'origine, ait compté autant d'antimatière que de matière. Deux mondes, à la fois identiques et opposés, également organisés, mais incapables par nature de se connaître. Ils coexisteraient toujours à travers l'espace, condamnés, si jamais ils se rencontrent, à se détruire mutuellement. Et, pour beaucoup d'astronomes, le rayonnement des quasars ou de certaines galaxies n'est que l'écho lointain de ces explosions fabuleuses.

Et d'expliquer : le point de vue de l'homme, quand il essaie de juger une situation, est toujours partiel et sentimental. Même quand il voit juste, les conséquences de ce qu'il a observé lui échappent, parce qu'il a tendance à prendre ses désirs pour des réalités. Ce sont ces désirs, ces sentiments qu'il met dans l'ordinateur. Et d'y ajouter une kyrielle de chiffres ne change rien au résultat. Au contraire, il faut se servir de la logique, glacée, de l'ordinateur pour dépister les pièges et les illusions de la sensibilité.

Il cite un exemple. Des esprits généreux s'imaginent qu'en réduisant le taux des naissances on rendrait les hommes plus heureux. Moins nombreux sur la Terre, ils pourraient mener une vie plus facile, plus agréable. C'est vrai, pendant quelques décennies, explique le Pr Forrester. Mais l'étude mathématique de l'évolution, sur machine, montre qu'ensuite, les hommes étant plus riches, leur industrie se développerait à un tel rythme que la pollution deviendrait un fléau mettant l'espèce en danger.

Ainsi, l'ordinateur renvoie l'homme à ses propres contradictions. Est-ce une raison pour casser le miroir ?

En fait, la crise actuelle procède d'un malentendu. L'homme a eu le tort de croire que l'ordinateur était une machine à organiser le monde. Il avait oublié qu'aucune machine ne saurait mettre de l'ordre, s'il ne commence pas lui-même par en mettre dans sa tête.

GERARD BONNOT ■



L'AUTOMATE VIVANT AU SICOB.
Une absurdité.

précise et aussi commode d'emploi qu'une machine à écrire. C'était le triomphe de la voiture individuelle sur les transports en commun.

Fatalité. C'était aussi, sournoisement, une manière de se débarrasser de l'ordinateur. Faute de pouvoir l'abolir, le brûler, comme le voudraient les séides de M. Matusow, on le casse. On le fait éclater en menus morceaux. L'informatique cesse de faire peur quand elle est en miettes.

C'est le fond de l'affaire. Au directeur de société qui hésite aujourd'hui à engloutir ses bénéfices dans l'aventure de l'informatique, comme au simple citoyen qui s'inquiète de recevoir sa feuille de paie ou sa quittance d'électricité en direct de l'imprimante, sans pouvoir la discuter, ou qui se demande sur quelles listes mystérieuses une machine a choisi son nom pour lui adresser un prospectus publicitaire, à tous l'ordinateur fait peur.

Pour longtemps refoulée, reléguée dans les plaisanteries et dans les cari-

toute sorte et l'appui des ordinateurs, ont pu mettre au point. Il y a là une fatalité en même temps qu'un grand danger, car le spécialiste et la machine négligent nécessairement ce qui, dans l'homme, échappe aux lois de l'électronique ou de la spécialisation. »

Partialité. Si légitime qu'apparaisse une telle défiance, on peut se demander si elle ne se trompe pas de cible en visant l'ordinateur. Témoignant, l'an dernier, devant une commission du Congrès américain, le Pr Jay W. Forrester, spécialiste des problèmes de management à l'Institut de technologie du Massachusetts, était le premier à souligner l'échec de l'homme contemporain dans ses tentatives pour organiser le monde, qu'il s'agisse de la gestion d'une affaire ou du bon usage des ressources de la planète. Mais il se gardait d'en rendre responsable l'ordinateur. Tout le mal, selon lui, vient seulement de ce que l'homme prétend utiliser l'ordinateur pour des choses qu'il ferait mieux lui-même.

Room 26-169

6 October 1971
En Route Paris to Boston

Dr. Aurelio Peccei
The Club of Rome
Via Giogione 163
00147 Rome, Italy

Dear Aurelio:

Only now have I finished reading carefully the draft which you and Alex prepared. I have relatively few changes to suggest except that it be condensed into fewer words. It is very good and seems to me an admirable assessment.

The Presentation is 20 triple-spaced pages (long paper) and the Opinion is 10 pages. In the book I expect the order would be:

	<u>Estimated Single Space</u>
A. Club of Rome	1/2
B. Presentation	7
C. Summary of M.I.T. Report	7
D. M.I.T. Report	40
E. Opinion	4

Printed in the Potomac format I do not know how many printed pages there would be - but one can easily count the words per page in the Potomac book Hopes and Fears and make an estimate and revise the figures I've set down above.

For the mailing to Romclub members and as a piece to use widely during the time until the book appears in January I think we'll need A, B, C and E above - all except the Report itself. I cannot at the moment see how anything less will be responsive to the insistent demands upon us which will escalate.

Dr. Aurelio Peccei
Page 2
6 October 1971

For both the SCEP Report of 1970 and the SMIC Report of 1971 we issued publicly (and mailed hundreds of copies in response to requests) the Summary of Conclusions and Recommendations (pages 9-23 and list of participants in book I gave out at our meeting on Monday).^{*} This promoted rather than hampered the sale of the book when it came out.

I think we should plan on needing at least 1,000 copies of this Interim Piece. If possible it should be reproduced on both sides of a page and done by printing or offset to be neat and readable.

I suggest that there be notables, computer runs, or other illustrations in the Interim Piece. Omitting them will greatly simplify and speed up reproduction. It will also give the book a real difference from the Interim Piece (IP).

We can and should indicate in the IP that a book will be published in January - and how, where and at what price it can be purchased. (See first page of SMIC enclosed summary issued at conclusion of study on July 15.)

I shall see Dennis this afternoon - ask him to note suggestions on King/Peccei draft - to add to mine, and send quickly to Jane. Maybe she can tighten it up somewhat in addition to giving consideration to the notes and questions Dennis and I will have entered in longhand.

I shall ask Dennis to draft a summary of not over 20 double spaced typed pages. I will take this with me on Wednesday, October 13, on my flight to Paris from New York. I go on Air France at 9:30 a.m. and will stay at the Orly Hilton leaving the next morning for Milan at 8:15 to be met and taken to Bellagio where I expect to see you.

A copy of this letter will go to Jane who perhaps can meet me at the Orly Hilton when I arrive Wednesday evening - and take the Dennis/CLW draft of summary and work it into a finished piece.

^{*}Copy of summary as distributed before book enclosed.

Dr. Aurelio Peccei
Page 3
6 October 1971

I will report to Dennis the result of our discussion of Chapter IV and proposal that it be omitted. I may also be able to bring with me next week copies of Chapters I, II, III, V and "speculations" - Chapter VI as furnished by the M.I.T. Group. Jane should collect revisions resulting from reading by you, Alex and others.

I feel very encouraged by our meeting on Monday and feel that it is a great opportunity and responsibility to be associated with you, Alex, Edouard, Hugo and Okita in this profoundly important enterprise. The stakes are global survival - probably in the lives of our children, certainly in the lives of our grandchildren.

Until next week,

Sincerely,

Carroll L. Wilson

CLW:F

Enclosure

cc: Dr. Peccei
c/o Dr. King, Paris

Professor Dennis Meadows

Dr. Alexander King

Miss Jane King

OCT 7 1971

IMPERIAL OIL LIMITED

111 St. Clair Avenue West, Toronto, Canada

RONALD S. RITCHIE
Senior Vice-President and Director

September 14, 1971

D.L. Meadows, Esq.,
Professor,
Massachusetts Institute of Technology,
E 40-214,
Cambridge, Massachusetts, 02139
U.S.A.

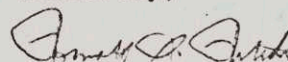
Dear Dennis:

Thank you for sending me, several weeks ago, a copy of the draft of "The Limits to Growth: A Global Challenge." I have no useful comments to make on it.

However, I think you will be interested in the attached copies of letters I have written to Jeremy Bray and Aurelio Peccei. I would be more than interested in any reactions you have to Jeremy's particular criticism. As I indicated in my note to Aurelio, I have encountered similar criticisms of the technique during the past year from a number of academics, as well as from some people at Rand. The whole subject is of intense interest to me because of the possible relevance for Canada's proposed new Institute for Research on Public Policy.

I am delighted to be able to enclose a copy of my proposals for the Institute. As you will notice, the report was released a few weeks ago, together with a very important commitment of financial support by the Federal Government. I would be interested in any reactions you have. I hope, too, that there will be an opportunity some time in the reasonably near future to discuss further your ideas for development of a Canadian model.

Sincerely,


Ronald S. Ritchie

Att.

IMPERIAL OIL LIMITED

111 St. Clair Avenue West, Toronto, Canada

RONALD S. RITCHIE
Senior Vice-President and Director

September 14, 1971

Airmail

Dr. Jeremy Bray,
Mullard House,
Torrington Place,
London WC1E, 7HD, England.

Dear Jeremy:

I very much appreciate having received copies of your letters of June 30 and August 3 to Aurelio Peccai regarding Dennis Meadows' study for the Club of Rome. I have not found it easy to sort out satisfactorily my personal conclusions about the powerful points of criticism you have made. Such as they are at this point, I shall try to set them down here.

Your basic criticism is of the methodology. This is a field in which I am certainly not expert, but I do have a feeling that the systems dynamics technique evolved at M.I.T. does yield useful results for certain purposes which other tested and accepted systems may not. It does make it possible, with reasonable effort and reasonable clarity, to see the working out through time of interrelationships between processes and elements in complex systems. Because of this, it does make it possible to test rather easily the results of different assumptions about these relationships or the effects of making changes in them.

The question of whether the relationships are themselves valid or whether they reflect reality is certainly pertinent. The approach does have the merit of making it relatively easy to test the

Cont'd....

September 14, 1971

significance of error. It is true also that, in the real world, relationships purportedly reflected in the model will change over time, not always in ways which are predicted in advance. Surely this is a hazard of forward analysis with any methodology.

The basic question, then, for me comes down to whether the methodology as used in the report produces useful insights or clarification about the world situation. To me, it seems that it does. It may be wrong in the suggested timing of particular results, it may exaggerate, or it may minimize the effects of particular factors, it cannot allow for developments or actions not yet foreseen, but still it does point reasonably realistically, it seems to me, to the direction of various major forces now at work.

It makes no pretence to anything more (cf p.67 of the draft report). You suggest that the report will be "demolished by the professional advisers of governments, business corporations, and other institutions." I can certainly see the launching of powerful arguments about the validity of particular assumptions in the model and sophisticated argument about methodology. This in itself would concern me very little. However, I would be concerned (and, indeed, delighted!) if the basic direction of the conclusions were effectively challenged. I would be somewhat surprised if any appropriate methodological criticism would have much effect in this direction.

Finally, I do share your view that the best interests of the Club of Rome are probably served by publishing and circulating the study as one done for the Club of Rome without at the same time appearing to launch an evangelical campaign based on its conclusions. The study and its conclusions will speak for themselves. They will have been one contribution of a series which the Club will make to consideration and clarification of some complex world problems.

I would welcome any comments you have on the views I have expressed or on my interpretation of your own.

Sincerely,

Ronald S. Ritchie

CC: Dr. A. Peccei
Prof. D.L. Meadows

IMPERIAL OIL LIMITED

111 St. Clair Avenue West, Toronto, Canada

RONALD S. RITCHIE
Senior Vice-President and Director

September 14, 1971

Airmail

Dr. Aurelio Peccel,
The Club of Rome,
Via Georgioane 153,
00147 Rome,
Italy.

Dear Aurelio:

As you know, Jeremy Bray has been sending me copies of letters he has written to you which are critical of the M.I.T. study for the Club of Rome. The points he makes are ones which I have encountered being made by a number of academics, including some of my friends at the Rand Corporation, about the whole of the Forrester approach.

So far as I have been able to assess the subject, the main force of the criticism is misdirected. The systems dynamics technique seems to me to be something of a breakthrough. It is a tool which enables us to manage the interrelationships of a complex system over long time periods or many very short time periods. No other method which I know permits this to the same useful degree. Most of them are designed for other purposes. The question is, therefore, not whether the technique contains faults and could be improved, it is, rather, whether it permits us to do something useful which could not otherwise be done.

I am quite prepared to find that my analysis has neglected some vital point and that it is wrong. However, my present conclusion is otherwise.

In light of all the controversy, I suspect we serve the purposes of the Club of Rome, as well as final judgments on the Forrester techniques, best if

Cont'd....

Dr. Aurelio Peccei

-2-

September 14, 1971

we follow the practice generally adopted by Brookings. In other words, we should put the Meadows' study forward to stand on its own merits. We would say, here is something on a subject in which we are very interested which merits your consideration--without taking the extra step of a strong endorsement which, in any event, it does not need.

Sincerely,

Ronald S. Ritchie

✓
cc: Prof. D.L. Meadows

Ronald S. Ritchie

*Senior Vice-President and Director
Imperial Oil Limited*

Toronto, Ontario

On August 11, 1971, the Prime Minister of Canada announced that the Federal Government supported the recommendations for creation in Canada of an independent Institute for Research on Public Policy. The Federal Government has made an initial one-time operating grant of \$950,000 and has committed itself to matching on a dollar-for-dollar basis endowment contributions made by others to a maximum of \$10,000,000 during the first seven years of the life of the proposed Institute.

The attached statement was released to members of the Press by the Prime Minister.

August 11, 1971

INSTITUTE FOR RESEARCH ON PUBLIC POLICY

In recent years calls have come from a variety of sources for the establishment of some sort of facility capable of thorough-going assessments and re-appraisals of the many and varied policies espoused from time to time by Canadians and their governments. Examinations of this kind are vital to inform the public. It was with this in mind that the Government, in September of 1968, expressed in its first Speech from the Throne its interest in the establishment of an institute where research and thinking could be carried out into long term governmental matters of all kinds.

To assist the Government in deciding how to carry out this intention, the Prime Minister invited Mr. Ronald Ritchie, a Vice-President of Imperial Oil Limited and former Executive Director of the Royal Commission on Government Organization (the Glassco Commission) to carry out a study regarding the feasibility of establishing such an institute in Canada. Mr. Ritchie completed his report and submitted it to the Prime Minister at the end of 1969. Mr. Ritchie's report has been published and is being made available today through Information Canada.

In the course of his examination of the problem, Mr. Ritchie visited all ten provinces of Canada and made personal studies of policy research institutes in other countries. Mr. Ritchie's report confirmed that there was a need for an institute aimed at "improving understanding of particular Canadian economic, social and political problems, domestic and international". Acknowledging the work already being done by certain institutions created for research in limited areas of policy, Mr. Ritchie's report concluded

that "the resources available in Canada are adequate neither in quantity nor in type to the requirements of the future".

Mr. Ritchie recommended that the institute should be established as a non-profit corporation under the Canada Corporations Act in order to ensure the independence of its work. He also recommended that the Government should provide a capital endowment sufficient to provide as much as one half of the anticipated operating expenses of the institute.

The Government has accepted these recommendations in principle and will be working out arrangements whereby the proposed institute will be free to use its endowment for purposes it deems worthwhile, consistent with the objectives of the institute. The Government will be prepared to make a substantial financial commitment to the institute over a limited number of years, on the basis of matching the contributions raised by the institute from all other sources.

The Prime Minister asked Mr. Ritchie to assist in the process of setting up the institute. Under the Canada Corporations Act, a non-profit corporation is established on the request of a group of private citizens. Mr. Ritchie's plans during the summer are to discuss the proposed institute with interested persons who could give it effective direction. During the autumn he will be inviting a small number of distinguished citizens to assume this task.

While it will be several years before the institute will be in a position to produce results from the long-term research that it will be undertaking, the publication of its studies will be bound to evoke widespread interest. Governments will benefit from research identifying emerging policy issues; revealing new approaches to long standing problems; or suggesting new modes of government. Public officials - both elected and appointed - academics, and Canadians at large, will benefit from the availability of new information on complex issues of public policy hitherto not available.

The formulation of public policy has, of necessity, become an increasingly complex endeavour, and this has contributed to the difficulty of understanding the functioning of modern governments and the rapidly changing issues with which they must deal. More than ever, it is vital that the implications of policies be examined in depth, and that people be informed concerning matters of public policy and the facts on which they are based. By adding to the information and knowledge available on public policy issues in Canada, the Government is consciously fuelling debate in the Press and in Parliament, thereby adding to the effectiveness of the national decision-making process. In this way the Prime Minister expected that the institute would redound to the benefit not only of those particularly concerned with public policy, but also of Canadians at large.



SEP 23 1971

Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

September 24

Dear Aurelio,

I'm sorry, but this is not a final draft — it is the introduction and the first two chapters of another (but not yet final) draft. As you can see, I am extensively revising the manuscript, and it is going to take much more time than I had expected. But I think it will be worth it: I am much happier with the present version — I hope you will be too. The overall plan is —

preliminaries — Alex King's contribution + the first page of the enclosed. I don't expect the first page here to actually be printed on one page, but to be arranged following the title page as the publisher sees fit.

introduction &

Chapter I — The Nature of Exponential Growth

dynamics of exponential growth

world population growth

world capital growth

Chapter II — The Implications of Present Growth

food

natural resources

pollution

Chapter III — The Limits to Growth

the purpose of the world model

the model assumptions

conclusions from the world model

enclosed
here

Chapter IV - Technology and the Limits to Growth

this section
may also
contain
computer runs

→ technological side-effects
problems with no technological solution
a choice of limits
needed technologies

Chapter V - The State of Equilibrium

Chapter VI - The Transition from Growth to Equilibrium

Chapter III will be nearly identical to Chapter IV of the previous version, except that I intend to change the computer runs slightly and to do some rewording - but the thought will be the same. The new Chapter IV will be totally new, and I will send it to Paris via Carroll Wilson.

The new Chapter V will be virtually unchanged from the old one. The new Chapter VI will be completely different - more a list of questions than statements - I also hope to get it to Paris via C.W.

I haven't included figures in this draft because they are being redrawn and relabelled - their content is much the same as the previous version.

~~By~~ I will be anxious for your reaction to the changes so far. Sorry I haven't progressed further, but the paper is clearly important enough to do as best I can.

Yours,
Dana

TENTATIVE AGENDA

1. Situation

2. MIT Report and ExCom Presentation

a. Publication and Diffusion in USA

= Potomac Associates Proposal

- Conditions
- Time Schedule
- Diffusion by PA in USA
- Ditto by CoR?
- Sales rights to Universe Books
(for USA --and other English-speaking countries?)

b. Translation and Diffusion by CoR in other countries

- = Other English-speaking areas
- = Italian
 - Mondadori's 'Scienza e Tecnica'
 - Other
- = French
 - Fayard (Delaunay's book)
- = Spanish (Latin America)
 - Mimeo?
- = Portuguese (Brasil)
 - Mimeo?
- = Japanese
- = German
- = Other.

- c. Transmission letter(s) by CoR
 - = Whenever necessary
- d. Information to CoR members
 - = Letter to communicate them both texts and distribution plan
 - = Their participation in diffusion

3. Follow-up action after Report and Presentation distribution (overlapping Phases One and Two)

Note: This will be a matter for continual review by ExCom.

- a. In Canada
 - = Institute for Research on Public Policy
 - = by CoR directly
- b. In USA
 - = Washington
 - = Elsewhere
- c. In Latin America
 - = Follow-up to Rio meeting
- d. In Sweden
- e. In Austria
 - = Invitation by new Chancellor
- f. In Switzerland
- g. In the Netherlands
 - = already initiated
 - = further developments

Ritchie

h. In Germany (also in conjunction with VW)

= Report by Eduard

i. In Italy

= Report by Aurelio

j. In France

k. In the UK

l. In Japan

= Report by Okita

m. In Jugoslavia

n. In Eastern Europe

o. In USSR

p. In India

q. In Africa

r. In other countries

s. In conjunction with International Organizations

- = UN [ACAST] [CW] - *To arrange*
- = OECD - *MS from AP*
- = WHO *Lambo invited*
- = UNESCO - *Buzzati-Traverso*
- = FAO - *Bjerma* *Ind. W. Pl.*
- = UNIDO -
- = UN Stockholm 1972 Conference on Man and his Environment *MaSTRONG*

Eur Econ Comm.

- = UNITAR - *meeting N.Y.* -
- Commission on the Future
- = EEC - ~~Agrarian~~ ~~EEC~~ ~~Am. Bishops~~
- = Other.

- t. In conjunction with other organizations or institutions
 - = The Conference Board *Sandy Truheridge*
 - = Atlantic Institute - *Feb 14 - New Multilat.*
 - = 3rd World Future *E. Europe* Research Conference 1972, Romania -
 - = International Social Sciences Centre 1972 Conference in Eastern Europe *Vienna - / WARSAW*
 - = World Council of Churches *CATH. CH.* (and other religious bodies) *Conf. Next yr.*

- u. In conjunction with many other (private) bodies
 - = such as those listed in May 9-10 Geneva ExCom meeting agenda.

- v. In conjunction with Foundations
 - = Volkswagen (follow-up)
 - = Ford
 - = Rockefeller
 - = Agnelli
 - = Thyssen
 - = Duttweiler
 - = Other.
- RBF*

- w. In conjunction with private industries
 - = IBM - *Tech + Soc. \$10⁶*
 - = Other
- Japan*

- x. TV, press & books
 - = NOS - ORTF - CBS - ABC (Australia)
 - = Other

4. Phase Two Blueprinta. Status of Preparations (see also 3. above) |

- = MIT
- = Battelle
- = Japan
- = Other

b. Financing5. Financial mattersa. Use of DM200,000 VW Grant Balance

- = Still in VW hands: DM14,617.52
- = A/c 51. N with UBS, Geneva: DM2,199.75
- = With MIT (uncommitted on May 30, 1971): \$7,208

b. Use of DM775,000 VW Grant Balance

- = With MIT (uncommitted in June 1971): approx. \$70,000
(out of VW remittance to MIT of DM720,000)
- = A/c 52. X with UBS Geneva: DM54,998.65, totally available.

Note: Presentations have been made through Eduard Pestel to VW for the use of all balances available.

c. Balance available of Italian contribution

- = A/c 30. Z with UBS Geneva: Sw. Fr. 26,194.10.
- = In Italy: approx. \$55,000.

d. Italian/Argentine contribution for preparatory phase of Latin American study

- = Already spent or engaged: \$20,000
- = Balance still required: unknown

e. Japanese contribution ✓

f. Other

6. CoR membership

a. As of June 30, 1971

- + Louis Armand *died*
- + Jacques Spaey "

b. Offers of resignation

- = Bodil Begtrup *X accept.*
- = Paul Weiss *X - ask to stay*

c. New members

- = In the Netherlands
- = In the UK
- = ~~In Latin America~~ *Add 2-3*
- = In Asia ←
- = In Africa ←
- = In Eastern Europe

*Japanese
Com:
additions
+ 6*

*Alva Myrdal
(when there -)*

India

7. ExCom

a. Membership

- = For Africa
- = For Latin America

b. Secretary

- = Arrangements with Jane King (part-time)

8. Other

DEPARTMENT OF ELECTRICAL ENGINEERING
THE FACULTY OF ENGINEERING
UNIVERSITY OF TOKYO
BUNKYO-KU, TOKYO, JAPAN

September 22, 1971

Professor Dennis L. Meadows
E40-214
Sloan School of Management
Massachusetts Institute of Technology
Cambridge, Mass. 02139

Dear Dennis:

Your letter surprised me very much. My secretary told me she surely sent my letter to you on August 23---it may be lost on its way to Boston. I enclose a copy of it once more, which may be almost useless.

As for my further plan I will visit Geneva at the beginning of October and stay there six months or more. This plan has already been confirmed by the Club of Rome. On my way to Geneva I will attend the executive committee in Paris and so will see you there.

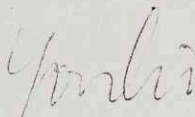
The work of Japan work team is still under way, but an interim report on the work written in Japanese has just been released. I will try to compile it and rewrite it in English, but I am afraid I have too little time. I will bring several copies of the report, so that I may talk about our work by use of the illustrations. I think you will probably be interested in two models we have developed, i.e. Japan SD model and the distributed world model. The former has been constructed referring to your world model, but the latter is quite different from that. Its objective is to manifest distribution of the world population along the axis of national income per capita, and the model is

governed mainly by partial differential equations. I believe it is effective to find a way how to diminish the gap between developed countries and developing ones.

Anyway I think we have a lot of things to discuss when and after meeting at Paris.

Looking forward to seeing you soon,

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Yoichi Kaya'.

Yoichi Kaya
Doctor of Engineering
Associate Professor

September 28, 1971

Dr. Yoichi Kaya
c/o Hugo Thiemann
Directeur General
Institut Battelle
7, route de Drize
Carouge, Geneva
Switzerland

Dear Yoichi,

Your first letter never arrived but the copy came in time to provide a useful input to our project. Thank you for your thoughtful comments.

I am sorry that we will not have an opportunity to meet in Paris. I must remain at M.I.T. for my lectures. It is clear that your own thinking has evolved substantially since the last we met. I would benefit very much now from talking with you about the work that has been underway in Japan, and I would also like to talk about future research possibilities. I do have two visits to Europe scheduled later this fall, and I hope that in December Dana and I may have the opportunity to stop in Geneva briefly to meet with you and the others at Battelle. I will give you my exact schedule later if that should become possible.

The two issues you raise--one of distribution and the other on the desirability of increasing GNP so we can solve our problems--are profoundly important and difficult issues. We have thought enough about both to have many important questions but very few answers. Let me suggest at least a couple of questions which seem to be important. There never has been equal income distribution in any society since technology first made it unnecessary for each man to grow his own food. What is there in the nature of our economic and social systems which leads to an unequal distribution? Would a society with perfect income distribution serve the needs of its inhabitants better or worse than a society with unequal distribution? What feasible mechanisms are there for slowing deliberately the economic growth of industrialized nations so that less industrialized nations can catch up? How much GNP growth will it take to satisfy all our needs? Is it possible that the GNP growth we create to solve current pollution problems one place, will create new pollution problems elsewhere so that total pollution is actually greater? What is the maximum global GNP we can sustain over the long term?

I don't know the answers to the above questions but they have a strong importance in deciding whether we must begin to sacrifice now or whether we can actually solve our pressing problems with additional growth. I hope we may discuss these issues in December.

Kaya Letter
Page 2

I hope that you will have a very pleasant and fruitful stay in Geneva with your family. I know you have sacrificed very much in leaving the University of Tokyo for such a length of time. However, if you can continue your work with the strong inter-disciplinary group at Battelle it will be worth the cost. Please give my regards to Dr. Thiemann.

Very cordially yours,

Dennis Meadows

DLM:cs



Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139

C. Wilson
Jules

OCT 1 1971

23 September 1971

Mr. William M. Dietel
Rockefeller Brothers Fund
30 Rockefeller Plaza
New York City 10020

Dear Mr. Dietel:

Thank you for the effective arrangements and gracious hospitality on Wednesday. We were pleased to meet with your people and to discover the extent to which their concerns and interests for the future seemed to coincide with those of our group.

You asked that I set down our thoughts on how the Rockefeller Brothers Fund might best advance the understanding of social systems through financial support to our program. I will do that but at the same time wish to stress our hope of receiving more than financial support: we also need from your associates the benefit of advice on the directions of future work and on how to make our efforts most effective at the earliest possible time.

In the discussion after our presentation, it appeared that your associates are interested in a wide range of issues, that they share our concern for the urgency of the tasks ahead, and that they also see the next major step as creating a growing national and international awareness of how social systems function and how to alter the directions in which we are now headed. If my observation is correct, I am confident that you and they will see the most urgent task as increasing the number of skilled professionals in system dynamics so that more of the important questions can be addressed and so that more people are available to convey the improved insights to the decision makers and the public.

Emphasis on the creation of a stream of trained people who are able to analyze the dynamic nature of social systems does not mean a conflict with other objectives. You and I have talked of project-oriented programs aimed at specific social problems, the creation of educational materials for college and secondary school use, and the development of new underlying theory for the field of social system dynamics. All of these will come along with the training of skilled people. System dynamics is an applied professional field. As with the other professions, an effective education requires internship and practical experience. Our preferred method of instruction is to teach in the context of an important and practical task.

I believe that the Rockefeller Brothers Fund can be most effective in giving major support to the creation of national professional competence in understanding the dynamic nature of our social systems. Over the next five to ten years this will be done best by building outward from the people and background that now exists in the System Dynamics Group at M.I.T.

To be most effective, the financial support should be as broadly defined as possible, so that it can be directed where the need is greatest and where the opportunities are timely. Ideally, the financial support would have the following characteristics:

- a) Funds should be available for the development of professionals in social system dynamics. The plans would include fellowships, teaching and research assistantships, research appointments during internship periods, teaching faculty, administrative support, and overhead and space expenses associated with these activities.
- b) Timing in the use of funds should be flexible. In particular, it should be permissible to defer funds if they are not needed in a particular year and to carry balances over to succeeding years. This permits maintaining a protective balance to assure continuity of staff who will be supported by varying short range project funds from other sources whose timing and duration are beyond our control. More and more we find that government and foundation support is on an annual, or even quarterly basis with almost no flexibility to meet changing circumstances and the fluctuating availability of the best people. I hope the Rockefeller Brothers Fund can provide the much needed counterbalance to the discreteness and short-time viewpoint that accompanies so much of today's support for teaching and research.
- c) Continuity of support and a reasonable time horizon for planning are essential if one is to conceive a sound educational program, assemble the best teachers and trainees, and move confidently toward the creation of future leaders. I hope funding can be on a moving commitment subject to a minimum termination time. A three-year horizon is the minimum if one is to build a competent staff; five-year notice of termination would allow the building of a much stronger program. We should agree and recognize that a new field of this kind can, and because of the urgency must, be launched within this decade. Lest there be concern about an unending implied obligation, I see the critical participation by the Rockefeller Brothers Fund as growing in the first five years and then contracting in the second five years as recognition and support come in from other sources.

I believe the above kind of support will best maximize the impact of our work in the least time and will influence the largest number of issues in our society. There are now only a few skilled professionals in social system dynamics. Their limited numbers make possible little more than demonstration of the feasibility and possibilities in the field. A two-stage process lies ahead--the creation of a wave of teachers and leaders who in turn will train the men and women to expand the frontiers of the field. It is this "second generation" to whom we must look for most of the actual influence on our world society.

Support for the creation of a sound base for the field of system dynamics will attract specific projects as competent people become available. At this stage in the development of a new field, the greatest leverage for impact lies in general support. Financial assistance from the Rockefeller Brothers Fund will serve as a focal point around which government and private sources of project support can be assembled. The projects that will be attracted will greatly augment the training function and will support the more expensive transition into practical application.

If a program along the above lines cannot be fitted into the policies and wishes of your organization, we could consider an orientation along the lines of specific projects and objectives. Of course a composite package of plans could be assembled. Within project sponsorship, it is still possible to carry on much of what is outlined above, although with less long-term effectiveness.

I will only mention here the areas in which project activity is now timely. If your decision should be to move in the project direction, we can detail one or more of these. In the urban area, the work should be extended to the regional level and also to the subsystems of the city such as education, crime, and welfare. In our world dynamics, we need to move toward the broader questions of how political and psychological forces affect the social system, and to the subsystems of population, agriculture, ecological systems, and natural resources. At the national level, we should begin to deal with economic growth in a limited environment and with the implications for monetary policy, inflation, foreign trade, and unemployment. The underlying theory of the field is only partially developed and should be strengthened. Education materials for the college level are only about 10% of adequate and need to be developed substantially if teaching is to become effective in other places. Before major changes in social attitudes can take place, there must be a widespread public understanding of the dynamic nature of our social systems; this means the creation of a now non-existent body of teaching materials for the secondary schools.

The nucleus upon which an effective program can be structured exists now in the System Dynamics Group at M.I.T. The methodology and theory have been evolved over the past fifteen years, and applications to social systems have attracted widespread interest from both academic institutions and from practical decision-makers. The research group currently stands at about twenty professionals (including students), with another dozen senior men acting as advisors and participants. Other schools show interest in attracting faculty to begin their own system dynamics programs, but we cannot presently meet the demand. Many applicants for positions as postdoctoral fellows must be rejected because of lack of resources. We believe the time is right and the opportunity present, to make a substantial impact on the way society is managed.

I hope these suggestions are useful to you. I will be pleased to develop any of them further if you will let me know which aspects merit further elaboration.

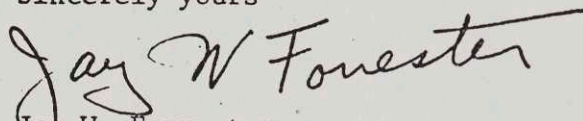
Mr. Dietel

-4-

23 Sept. 1971

As I am sure you realize, my colleagues and I deeply appreciate the opportunity to meet with your group.

Sincerely yours

A handwritten signature in cursive script that reads "Jay W. Forrester". The signature is written in dark ink and is positioned above the typed name.

Jay W. Forrester
Professor of Management

m