[ca Jan, 1959]

From

Mr. Mohamed Anwer,
S.D.O., Chishtian Provincial Subdivision,
Hasilpur, Distt. Bhawalpur, West Pakistan.

To

1. Dr. R. Courant,
New York Univ., U.S.A.

2. Prof. E.C. Titchmarsh,
Univ., of Oxford, England.

3. Pfof. W.W. Rogosinski,
Univ. of Durham, England.

4. Dr. Norbert Wiener,
M.I.T., U.S.A.

5.

6.

Dear Sirs,

That the set of real numbers between 0 and 1 is non-denumerable is generally proved in your and other text-books, by writing a sequence $A_1, A_2, A_3, \ldots, A_n, \ldots$ of numbers concerned in the infinite decimal form, and then constructing a real number B different from each A_n in the nth decimal place. As we compare B with $A_1, A_2, \ldots, A_n, \ldots$ successively, the decimal place of difference goes to infinity. i.e., the difference vanishes. Does this not mean that at least one number of the set of Ax A's must differ from B in the decimal place at infinity, i.e., must be identical with it? To me the answer is in positive and B is no addition to the set of A's. Let the mathematicians prove it otherwise. My conviction is borne out by the following:-

With $\epsilon < \frac{1}{2}$, place the interval ϵ on (0,1), so that its left end coincides with 0. Place $\frac{\epsilon}{2}, \frac{\epsilon}{4}, \frac{\epsilon}{8}, \ldots, \frac{\epsilon}{2^n}, \ldots$ ahead of one another succesively, so that the left end of each succeeding interval coincides with the right end of the preceding interval. In this way we reach at most the point $\epsilon + \frac{\epsilon}{2} + \frac{\epsilon}{4} \ldots = 2\epsilon < 1$. If ϵ is irrational, all rationals on $(0, 2\epsilon)$ are covered in the ordinary sense. If ϵ is rational, then the points $0, \epsilon, \frac{3\epsilon}{2}, \frac{7\epsilon}{4}, \ldots$ are left uncovered. Let the mathematicians show how they propose to spread these covering intervals apart, so as to cover all rationals on (0,1) without leaving gaps between them. To me this is impossible, and the idea of measure an unfortunate one.

If the eminent mathematicians addressed can repudiate my convictions, they may please do it at the earliest. If they confirm them, I have a paper ready. Then it should be published

at the earliest, for then it will set on right lines vast mathematical effort being spent on misconceptions. Originally this paper was sent for criticism to the above, Prof. Hestenes, Dr. Mcnerney, and West Germany. According to reports obtained from Germany it has not been received there. Same must be the case with others, hence this letter.

Yours sincerely,

Mohd Anwer 27/XII/58

(Mohamed Anwer)

[ca Jan. 1959]

From

Mr. Muhammad Anwer., B.A., B.Sc., Engg:.,
Subdivisional Officer,
Chistian Provincial Subdivisior, at Hasilpur.
District Bahawalpur, West Pakistan.

To

1. Dr:R.Courant,
Director, Institute of MATHEMATICAL Sciences,
NewYork University, N.Y., U.S.A.
2. Prof: E.C. Titchmarsh,
Savilian Professor of Geometry,
University of Oxford, England.
3. Prof: W.W.Rogosinski,
University of Durham, England.
4. Prof: Norbert.Wiener,
M.I.T., Massachussetts.
5. Prof: M.R.Hestenes.,
UCLA., U.S.A.
6. Dr: J.MsNerney,
University of North M. Carolina, U.S.A.
7.
8.

Dear sir,

The enclosed paper is forwarded inviting criticism due to reasons given below. When the author got the first inkling of the ideas presented in this paper while studying the relevant subject for the first time, he dared not speak of them as these seemed to challenge almost universally accepted concepets in modern mathematics. But after no less than three years of hard work and research , he has been convineed of the truth of the contents of this paper. The author was also encouraged by a study of the last chapter, "Paradise Lost" of the book, Men of Mathematics by E.T. Bell, wherein he learnt that the modern concepts of infinite have not gone unchallenged. The Book cites Brouwer and Weyl as the opponents. Thus encouraged the author perfected the arguments presented in this paper and is now convinced that the Mathematician's paradise is indeed lost. Still as a final check ~~you~~ he would like to invite critism from the Authorities addressed before offering it for publication.

An early reply is solicited.

Yours sincerely,

Muhammad Anwer 28/2/59

(Muhammad Anwer).

On Measure and Denumerable Infinite Sets.

MOHAMED ANWAR., B.A(Math:)B.Sc (Engg:)

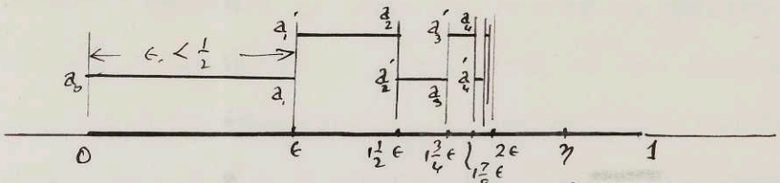
Synopsis

The following paper presents (i) a graphical demonstration showing that the measure of rational points on the closed interval (0,1) is not zero; and (ii) a line on reasoning that destroys the maintained superiority of measure over content.

---

1. The measure of the set of all rational points on (0,1) is generally proved[1,2] to be zero by showing that a set of intervals of the form $\epsilon, \frac{\epsilon}{2}, \frac{\epsilon}{4}, \ldots \frac{\epsilon}{2^n} \ldots$ can cover them on account of their denumerability. Let us try to check if this is valid, by some physical measure means of placing intervals of the above set on the interval (0,1).

Let ϵ be , to begin with, any rational number $< \frac{1}{2}$. First place the open interval $a_0 a_1$ of length ϵ on (0.1), so that its left end coincides with 0, and the right end with the rational number ϵ. (See fig.)



Now place the open interval $a_1' a_2$ of length $\frac{\epsilon}{2}$ ahead of $a_0 a_1$, so that its left end coincides with point $a_1 = \epsilon$, and the right end with the point $1\frac{1}{2}\epsilon$ on (0,1). Then the two intervals $a_0 a_1$ and $a_1' a_2$ together cover all rational points between 0 and $1\frac{1}{2}\epsilon$, except ϵ. Again place the interval $a_2' a_3$ of length $\frac{\epsilon}{4}$ ahead of $a_1' a_2$, so that its left end coincides with a_2 and the right end with the point $1\frac{3}{4}\epsilon$ on (0,1). Then all the three intervals cover all rational points from 0 to $1\frac{3}{4}\epsilon$, except ϵ, and $1\frac{1}{2}\epsilon$. Proceeding in this way we place intervals $a_n' a_{n+1}$ of length $\frac{\epsilon}{2^n}$ ahead of intervals $a_{n-1}' a_n$ of length $\frac{\epsilon}{2^{n-1}}$, so that the left end of former coincides with the point $\epsilon + \frac{\epsilon}{2} + \ldots + \frac{\epsilon}{2^{n-1}}$, and the right end with the point $\epsilon + \frac{\epsilon}{2} + \ldots + \frac{\epsilon}{2^n}$. Taking this process to infinity we note that we can at most reach $2\epsilon < 1$.

Thus set of intervals of the form $\epsilon, \frac{\epsilon}{2}, \frac{\epsilon}{4} \ldots \frac{\epsilon}{2^n} \ldots$ can, when placed in the above manner cover rational points from 0 to 2ϵ on (0,1) leaving the rational points $\epsilon, \frac{\epsilon}{2} \ldots \frac{\epsilon}{2^n} \ldots$ on (0,1) uncovered. If we should like to cover any rational point $\eta \geq 2\epsilon$, we shall have to spread the intervals as placed above, leaving gaps between them on left of 2ϵ, whose total length is atleast $\eta - 2\epsilon$. Had ϵ been irrational, then the intervals as placed above, would have covered all rational points from 0 to 2ϵ, but it would still be impossible to go beyond 2ϵ, without similar loss of coverage on left of 2ϵ. In view of this it is obviously impossible to cover all rational points on (0,1), by a set of open intervals of the form $\epsilon, \frac{\epsilon}{2}, \frac{\epsilon}{4}, \ldots \frac{\epsilon}{2^n} \ldots$. The property of rational points that prevents this coverage is that they are dense everywhere. Their so called denumerability does not help them in the least. This means that there must be a mistake in the arguments leading to the contrary conclusion. We locate their mistake in section 2. of this paper.

2. That the set of all real numbers between 0 and is non-denumerable, is usually proved as follows.[3,4,5] The set of all real numbers is written in the decimal form and is assumed tobe denumerated as in the list below.

$A_1 = 0.\ a_{11}\ a_{12}\ a_{13}\ a_{14} \ldots\ldots\ldots$
$A_2 = 0.\ a_{21}\ a_{22}\ a_{23}\ a_{24} \ldots\ldots\ldots$
$A_3 = 0.\ a_{31}\ a_{32}\ a_{33}\ a_{34} \ldots\ldots\ldots$
. . . . . .
. . . . . .
$A_n = 0.\ a_{n1}\ a_{n2}\ a_{n3}\ a_{n4} \ldots\ldots\ldots$
. . . . . .

Then a real number $B = 0.\ b_1 b_2 b_3 b_4 \ldots\ldots\ldots$ is formed by putting $b_n = a_n + 1$ if $a_n \neq 9$, and b_n = say 4, if $a_n = 9$. Then it is argued that B is a real number different from each A_n, and hence a denumerated list cannot contain all real numbers from 0 to 1. But in this last conclusion a mistake occurs which is clarified by examining the line of reasoning involved in this conclusion. Thus, it is argued that B is not in the denumerated list of all A_n, because it differs from every A_n. Now this underlined part of the argument is in-complete. It is ignored that n is not only the suffix

to A_n but also signified the decimal place of difference. Actually the complete statement is "B differs from every A_n in the nth decimal place." Now if we start comparing B with A_1, A_2, A_3 ..... A_n . . . . successively for difference, we note that the decimal place of difference goes to infinity i.e. the difference between B and A_n becomes smaller and smaller and ultimately tends to 0, as n tends to ∞ . Therefore B is not necessarily different from every A_n and, in a sense, is not different from A_∞ . Therefore B is no new number and the set of all real number is as denumerable as any other, which seems to the author to mean nothing more than the statement that all infinite collections are equal.

Conclusion.

The results obtained above demonstrate the absurdity of some concepts rampant in modern mathematics and those, which will be affected are:-

(i) Concept of difference between denumerable and non-denumerable infinite sets.

(ii) Concept of space-filling ares.[6,7]

(iii) Concept of measure and Lebesgue integral. Probably the most general theorem on integration will be that of Jordan,[8] stated in much simpler manner as follows:[9]

> A bounded function is integrable on a finite interval when the set of points of discontinuity of the function in that interval has a finite number of limit points.

References:

1. Titchmarsh. Theory of Functions, p. 324, Art: 10.22
2. Phillip Franklin. Advanced Calculus. p. 250-251.
3. Titchmarsh. Ibid. p. 32 Art: 10.201.
4. H. Lass, Elements of pure and Applied Mathematics Art: 10.11 p. 395.
5. Rogosinski. Volume and Integral.
6. Phillip Franklin. Ibid. Problem-35, p. 56
7. E. B. Wilson. Advance Calculus p 312.
8. Phillip Franklin. Ibid. p346, Art: 151
9. E. B. Wilson. Ibid. p. 53, Art. 30.

Mohd Anwer 28/XII/57

(Mohamed Anwer)

EVANGELISCHE AKADEMIE
SCHLOSS TUTZING AM STARNBERGERSEE
FERNRUF TUTZING 666

Dozent Dr.S.Schulz
Erlangen,Hofmannstr.85

Erlangen,den 2.1.59.

Sehr geehrter Herr Professor!

Seit einiger Zeit findet in der Akademie Tutzing einmal im Jahr ein "Akademisches Symposion" für Dozenten und wissenschaftliche Assistenten an den Universitäten in Westdeutschland statt.Das Symposion 1959 -vom 30.7.-2.8.- wird sich mit dem Thema:Der Mensch zwischen Tier und Maschine beschäftigen (die Formulierung ist allerdings keine endgültige!).

Hierzu werden Prof.Kühn/Mainz vom archäologischen,Dr. Erich Neumann/Tel-Aviv vom tiefenpsychologischen,Dr.Werner Haftmann/Paris von der modernen Kunst und Prof.Ebeling / Zürich vom protestantischen Standpunkt aus referieren.

Ihr ausgezeichnetes Buch"Mensch und Menschmaschine" ist von allen meinen Freunden,Bekannten und von mir selbst mit dem allergrössten Interesse gelesen worden.Da Sie nun,Sehr verehrter Herr Professor,einer der führenden Kybernetiker in den USA und überhaupt sind,wäre es ein besonderes Ereignis,wenn Sie im kommenden Symposion zu uns sprechen könnten.

Der Hörerkreis ist in gewisser Weise ideal,da er sich aus Wissenschaftlern aller Fakultäten und der verschiedenen Universitäten in der Bundesrepublik Deutschland zusammensetzt.

Ein Honorar von 2000.-DM stände Ihnen zur Verfügung,die Flugreise und die Aufenthaltskosten würden Ihnen natürlich zurückertattet werden.

Für eine kurze Antwort wäre ich Ihnen sehr dankbar.
Mit freundlichen Grüssen bin ich

Ihr sehr ergebener

Siegfried Schulz

[ank 1/19/59]

1/3/59

Dr. Norbert Wiener,
Mass. Inst. of Tech.

Dear Dr. Wiener :

As Vice-President of the Association of Mathematics Teachers of N.J. I am in charge of our November program at Atlantic City.

It has always been my feeling that we, as teachers, have much to learn from the people who do the most with the subject we attempt to teach, the mathematician. The problem of communication between our two groups is a difficult one to surmount. However I felt that the outstanding exponent of your group would be the person to help us surmount this barrier. I am not presumptuous enough to suspect that you would be free to do this personally-- although I am hopeful enough not to discount this slight possibility. Naturally this would be ideal if it were possible. Should it not be possible I would hope that you might be in a position to recommend someone whom I could contact.

I would greatly appreciate any assistance you might be able to give me in connection with this program.

Thank you.

Sincerely,

Harold A Gouss

Harold A. Gouss,
Chairman, Mathematics Dept.,
South Side High School,
Newark, 8, N.J.

[aws 2/27/59]

Swarthmore College
Swarthmore, Pa.
January 5, 1959

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge 38, Mass.

Dear Sir:

For the past eleven years at Swarthmore a group known as Science Integration has been organized by students for the purpose of bringing speakers in the various scientific fields to the college.

We would like to have you speak either on some aspect of your work, or on cybernetics generally. Our talks usually appeal to students of all the sciences so the more technical aspects of any subject are best reserved for a discussion period after the talk.

Thursday evenings are convenient for most people, and if this holds true for you I would suggest one in March. Being a student organization we could afford to pay only your transportation and expenses here, but we can promise you an interested and alert audience.

I hope you will be interested in speaking to us and that we can arrange a time at your convenience.

Yours truly,

Catherine Pinkney

Catherine Pinkney
for Science Integration

[ans 1/9/59]

DIVISION OF CHEMICAL LITERATURE
AMERICAN CHEMICAL SOCIETY

January 7, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Dr. Wiener:

The Division of Chemical Literature would be honored indeed if you would be their guest and speaker at luncheon on Tuesday, April 7, 1959, during the 135th National Meeting of the American Chemical Society, to be held in Boston.

Your audience would consist of people concerned with various problems of documentation and communication in the field of chemistry and chemical engineering. While most of our members received their basic education in chemistry or a related science, their present professional activities are connected with some aspect of chemical documentation, e.g., librarianship, literature searching, indexing, or technical writing, editing, abstracting, and translating. All are interested in the problems of retrieval and dissemination of scientific and technical information; some are actively engaged in developing new methods, systems or machines for these purposes. One of the symposia on our two-day program will be on mechanical translation.

I know that you have much to say which would be of vital interest to this group. Perhaps you might give us some of your thoughts on the capabilities and limits of machines vs. the human mind in processing and retrieval of recorded knowledge? However, we would leave the actual subject of your talk entirely to you.

I hasten to add that we are not a wealthy organization and cannot offer a fee to our speakers. All we can offer you is our sincere admiration and the assurance that your words will fall on receptive soil.

SHEET NO. 2 FROM H. Friedenstein TO Dr. N. Wiener DATE 1-7-59

I hope that you will find it possible to be our guest and speaker at this luncheon. Would you be good enough to let me know soon?

Very truly yours,

Hanna Friedenstein

HF:amf

Hanna Friedenstein
Chairman, Division of
Chemical Literature

[ans 1/9/59]

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UNIVAC PARK
ST. PAUL 16, MINNESOTA

January 7, 1959

Dr. Norbert Wiener
M.I.T.
Boston, Mass.

Dear Dr. Wiener:

I am currently preparing a Handbook for technical writers, a reference manual for engineers and technologists who must write reports, manuals, and possibly articles. I am including reprints of published articles that illustrate different types of technical writing: objective description, research report, process report, etc., and I have been seeking a good example of a Classification article. I am wondering if, among your published books and articles, there might be something I could include to illustrate classification as developed in an article (which might be a section from a book).

I have been fortunate in getting permission to reprint some outstanding works, such as Albert Einstein's "Time, Space, and Gravitation," which I use to illustrate an Analysis Article. I would be very honored to include you in this illustrious company.

In the Handbook, I define the Classification Article as one which explains a subject by dividing it into separate factors and then discusses each factor separately. To be more specific, it would be the grouping of ideas, facts, or objects on the basis of common characteristics or purpose. For example, an article might be termed a Classffication Article if it took the important forms of energy, divided them into gravitational potential energy, electrical energy, radiant energy, kinetic energy, and heat, and then discussed each factor separately and in their relationship to the whole.

I have looked through as much of your published works as our local libraries make available, but I have found nothing I could call strictly a Classification Article. A section of a book would suffice if it were an entity in itself.

Can you recall anything of this nature that you have written, and if so, would you permit me to have it reprinted in the Handbook?

If you do not have such a publication, would you permit me to reprint "Cybernetics and Society," the paper you presented in 1950 before the New York Chapter of the Society for the Advancement of Management, as an example of a Research Article?

Yours very sincerely,

M. L. Norgaard

M. L. Norgaard
Technical Editor
Management Services

ERA-763-6

[ans 2/26/59]

January 7, 1959

L'Administration Centrale
de "Scientia"
4, Via Roncaglia
ASSO
Como, Italy

Gentlemen:

We would like to order an additional number of reprints of the article "Time and the Science of Organization" by N. Wiener, which appeared in "Scientia", September, 1958. If possible, we would like to have 350 copies of the reprint. If this number is not available, we would very much appreciate having 50 or more copies. Please advise us as to the availability and cost of these reprints.

Thank you very much.

Sincerely,

Margaret M. Kruger (Mrs.)
Secretary to
Professor N. Wiener

[ans 2/17/59]

January 7, 1959

Mr. Jason Epstein
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Jason:

Many thanks for everything. The contract is signed and the advance check is in. I have already done my revision and I have looked up all company and personal names to be sure that I am not treading on any toes. I have made one or two slight modifications. In my revision I have conformed to your wishes except possibly on one point. I have talked over with my engineering friends the probability of a man rising as quickly as James did. Under the circumstances of the story and of the date concerned they regard this as perfectly plausible.

As you have seen the manuscript it runs unbroken without chapter headings or subtitles. In view of the fact that this is a quasi-autobiographical statement for a particular individual and not directly for the press, ordinary chapter divisions seem to me to be unsuitable. However, breaks are necessary. I have indicated to my secretary where these breaks should occur and I wish them to be indicated by an extra broad paragraph space possibly with a line of dots across the page and possibly with a number. I think I will number these sections but you are perfectly at liberty to use any publishing technique you want. In doing this I am following the technique of similarly told tales of Conrad.

It is my guess that the manuscript in the original and one copy will be in your hands sometime early in February. I am having it completely copied so that you will have clear material to work on. I hope you will like what I have done to it.

With best regards from both of us to both of you.

Sincerely yours,

Norbert Wiener

NW:mmk

[ans 1/9/59]

January 8, 1959

Dr. Bernhard Hassenstein
Forschungsgruppe Kybernetik
Max-Planck-Institut Fur Biologie
Spemannstrasse 34
Tubingen, Germany

Dear Dr. Hassenstein:

I am writing in English because it is easier for my secretary to take it down in English. Many thanks for your kind letter of December 30th. My wife and I have the most pleasant recollections of our stay in Varena. I am delighted to hear that you are giving a lecture at your university on the theme cybernetics as a method of investigation in technics and biology. I want to be any help that I can to you and to the work on cybernetics in Tubingen.

There is one little historical mistake for which I am responsible by insufficient clarity in our discussion together. The little incident concerning the temporary ataxia of my grandaughter was many years subsequent to my first idea of cybernetics and is not responsible for them. What happened was that during the course of the war I was very much interested in predictors for anti-aircraft. As these depended upon a feedback, the question of oscillation overloaded feedback systems interested me at the time. I was already quite aware that feedback plays an important part in such voluntary activities as driving a car. With the knowledge that an overloaded feedback system could be unstable I wondered whether the same thing couldn't happen in that sort of voluntary activity. Then, I reflected that the kinesthetic sense is itself a feedback and I wondered if an abnormal overloading of the feedback system could not lead to tremor. I talked this over with my colleague Bigelow, with whom I was jointly engaged in the design of predictors for anti-aircraft. Both of us decided to raise the biological question and to put it to my friend, Dr. Arturo Rosenblueth, then of the Harvard Medical School and now associated with the Instituto Nacional Cardiologia in Mexico, to find out if any pathological conditions were known in which the attempt to achieve a purpose by the use of the muscles would lead to an uncontrollable tremor. He told us that in fact such cases were known and were designated as purpose tremor. There were associated with disorders of the cerebellum. In a case like this the patient, in attempting to accomplish a simple act like picking up a glass of water, goes into a violent tremor and spills it. This confirms the impression I already had of the importance of feedback in biological systems and lead me to the idea of cybernetics, that is, a study of feedback processes and similar communication problems irrespective of whether they were exhibited in the machine or in the living organism.

Many years later when my little grandaughter, then about two years old, was staying with us in the White Mountains, she suddenly became ill and was unable to get out of her crib although she tried. Observing her actions carefully I saw that the difficulty was not one of paralysis, for her motions were quite as vigorous as before and did not show any restriction in the contraction of any muscle, but were rather in the nature of ataxia, an inability to organize her motion. In view of my previous acquaintance with purpose tremor, I felt quite sure that this was a case of that and that whatever disorder she might have involved the kinesthetic feedback into the cerebellum. When the doctors attended to her they confirmed my impression and stated that she was suffering from an obscure form of encephalitis, probably infectious, involving the cerebellum. I may say that her illness terminated favorably within a week or so and left no after-effects. This is the relation between the incident of my grandaughter and cybernetics.

My first work on feedback with Bigelow and Rosenblueth occurred during the war and I should say in 1941 or 1942.

I am enclosing an article in Scientia together with an article on "My Connection with Cybernetics. Its origins and its future." They will give you the historical background.

You ask about what new points of view I was presenting at Varena. The chief one was that of the study of nonlinear feedback phenomena and of the brainwave as a result of a system of oscillators driving itself by its own electrical flicker. Here the important idea is that the ability of the brain to be driven by electrical oscillations is a sign of nonlinearity. You will find material concerning this in the two articles I am sending you.

In the course of my early work on cybernetics it became apparent to me that communication and control problems must be studied from a statistical point of view. My early work on generalized harmonic analysis had made it clear to me that such a point of view is indispensable in this study. You will find some reference to this in my book on extrapolation, interpolation, etc., published by Wiley. This represents the consequences of some ideas which I had in connection with anti-aircraft fire during the war and which I later released for publication as a book. This made me very receptive to Shannon's early work on entropy. The statistical point of view was mine before it was Shannon's but the particular embodiment of this in the notion of entropy was discovered independently by Shannon and is probably in this specific form, even more his than mine.

The notion of autocorrelation goes back to my early work on generalized harmonic analysis and was fully explicit to me for years before I started on cybernetics. Later on I found that it was really the essential idea of the use of the Michelson Interferometer. The application of this to nonlinear systems is to be found in my new book, Nonlinear Problems in

Random Theory, recently published by the Technology Press and Wiley. I am seeing that you receive a copy of this from the publishers. There you will also find these concepts applied both to biological and to engineering problems. I consider this new book of mine as an essay in nonlinear cybernetics.

As to your schema of cybernetics I think it is good and I am in complete agreement with it.

I should be glad to look over your lecture before its definitive publication and tell you my impressions of it.

I am delighted to hear of the success of the research group on cybernetics at Tubingen. Please see that I get all your publications and I will circulate them where they will do the most good.

Greetings from my wife.

Cordially yours,

Norbert Wiener

NW:mmk
Enclosures 2

January 8, 1959

Mr. Russell Johnson, Secretary
Greater Boston Committee for a
Sane Nuclear Policy
Box 75
Cambridge 38, Massachusetts

Dear Mr. Johnson:

Enclosed is the signed authorization for the Greater Boston Committee for a Sane Nuclear Policy to use the name of Norbert Wiener as a Committee Sponsor.

Sincerely,

Margaret M. Kruger (Mrs.)
Secretary to
Professor Wiener

January 8, 1959

Professor P. Masani
Mathematics Department
The Institute of Science
Bombay 1, India

Dear Professor Masani:

Professor Wiener has asked me to write and tell you that he has received the proof sheets of the paper on "Non-Linear Prediction". He would like for you to go ahead with your plans, of which he fully approves. He will write you a detailed letter as soon as he can.

Sincerely,

Margaret M. Kruger (Mrs.)
Secretary to
Professor Wiener

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January 9, 1959

Mr. Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Norbert:

I am delighted that the manuscript is nearly finished and I look forward very much to seeing it early in February. If your guess that it will be ready by then is correct, I think it won't be difficult to deal with the divisions in the text. One solution that occurs to me is to handle them simply like diary entries, with the appropriate date at the head of each division. How does this strike you?

With our very best wishes to you and Margaret.

Sincerely yours,

Jason Epstein

[ans 1/15/59]

CASE INSTITUTE OF TECHNOLOGY
UNIVERSITY CIRCLE
CLEVELAND 6, OHIO

DEPARTMENT OF MATHEMATICS

January 9, 1959

Dear Professor Wiener,

I have given Armand a copy of the book that the five of us have been working on and he will pass it on to you.

I hope that it matches up to the work that we did together last summer, when Edwin was with us, and the years before, when we were all in Cambridge. You will find that it is essentially complete, if you add the chapter on Quantum Theory that Armand has given you. Armand has yet to type only the chapter on Statistical Mechanics and Ted has only a few pages to add to Integration in Differential Space.

Because we now have to communicate at long distance, I have taken the liberty of writing a preface for your criticism and Armand, Edwin, Ted and I propose a title which we hope you will find acceptable. We want your comments.

Edwin is especially interested in having you read again carefully the chapters on prediction, which you and he prepared. He was a little concerned about his method of presenting multiple prediction, but I am sure you will find that the chapter includes most of what you wanted.

Edwin's chapter on Ergodic Decomposition is not yet in Armand's hands. Armand will pass it on to you as soon as he has read it.

I have proposed to the others that we do not spend more time continuing a search for one or two mathematicians who would critically review the book before it goes to press. I would also like your O.K. on this point.

Please write me of your comments, now that the chapters are together. I would like everyone to be satisfied about the book as soon as possible, so that we can send the original copy to the press.

Best wishes to you and Mrs. Wiener,

Sam
[Ranking]

[ans 1/19/59]

January 9, 1959

Mr. Melvin N. Brenner
Executive Director
The Family Service of Chester County
300 South High Street
West Chester, Pennsylvania

Dear Mr. Brenner:

I have received your letter of December 17, 1958, addressed to Miss Ruth S. Goodwin with regard to your letter of July 14 to Professor Wiener. I am unable to locate your original letter of July 14, but if you would like to write Professor Wiener again at this time, he would be happy to answer it. We are sorry for any inconvenience this may have caused you.

Sincerely,

Margaret M. Kruger (Mrs.)
Secretary to
Professor Wiener

[ans 1/14/59]

January 9, 1959

Mr. Roger Caillois
Diogene
19, Avenue Kleber
Paris 16, France

Dear Mr. Caillois:

Thank you for your letter of December 3rd. I appreciate your request for me to submit a paper on cybernetics to appear in Diogenes. I should be happy to consider doing so later but feel that I am not immediately able to undertake it.

Please feel free to contact me with regard to this at some future date.

Sincerely yours,

Norbert Wiener

:mmk

January 9, 1959

Miss Hanna Friedenstein
Chairman, Division of Chemical Literature
American Chemical Society
Godfrey L. Cabot, Inc.
38 Memorial Drive
Cambridge 42, Massachusetts

Dear Miss Friedenstein:

Thank you very much for your invitation to speak before the American Chemical Society during their meeting in April. I regret that I must decline in order to conserve my strength for creative research. I appreciate your thinking of me and am honored by the invitation.

Sincerely yours,

Norbert Wiener

:mmk

January 9, 1959

Miss Catherine Pinkney
Swarthmore College
Swarthmore, Pennsylvania

Dear Miss Pinkney:

I appreciate your invitation to speak before the Science Integration group at Swarthmore College. However, I regret that I must decline all outside speaking engagements in order to conserve my strength for my creative research. I hope you will understand.

Thank you again.

Sincerely yours,

Norbert Wiener

:mmk

January 9, 1959

Professor Judah Rosenblatt
Department of Mathematics and Statistics
Purdue University
Lafayette, Indiana

Dear Professor Rosenblatt:

Thank you very much for your invitation to participate in the Symposium on Decision Processes to be held at Purdue University in April. I regret that I must decline all outside speaking engagements at this time, in order to conserve my strength for my creative research.

Sincerely yours,

Norbert Wiener

:mmk

January 9, 1959

Dr. Alfred A. Wolf
University of Pennsylvania
The Moore School of Electrical Engineering
Philadelphia 4, Pennsylvania

Dear Dr. Wolf:

Thank you very much for your invitation to speak before the Institute of Radio Engineers in Philadelphia. I am honored by the invitation, but regret that I must decline all outside speaking engagements at this time. I am finding it necessary to conserve my strength for my creative research.

I hope you will understand.

Sincerely yours,

Norbert Wiener

:mmk

UNIVERSIDADE DE SÃO PAULO
FACULDADE DE FILOSOFIA, CIÊNCIAS E LETRAS
CAIXA POSTAL, 8.105
SÃO PAULO - BRASIL

Prof. Dr. W. Güttinger
Dep. of Physics,
University of Sao Paulo,
C.P. 8105,
Sao Paulo, Brasil

S.Paulo, 10/I/59

Prof. Dr. N. Wiener,
Dep. of Mathematics,
Massachussetts Institute of Technology
Cambridge, Mass.,USA.

Dear Professor Wiener,

During a recent meeting on distributions and applications to quantum field theory, Prof. L Schwartz informed me about some attempts by yourself to define products of arbitrary distributions.
Since I am working on those problems since many years I would be very interested in getting some informations about your approach. In particular, I would appreciate very much having copies of any papers you have written on those (and related) subjects.

My work on distribution products (applied to problems of quantum field theory) is in part contained in papers in Progress of Theoret. Physics (Japan) 13, 612 ('55), Nuovo Cimento X,1('58) and Nuclear Physics (Dec.58). The methods used to define distributions products are closely related to those used by König(Math.Annalen 128(420)'55; Proc. Int. Math.Congr. Amsterdam 1954 and Arich f. Mathematik 6, 391(1955)).

At any case, I am sending you under separate cover copies of the papers mentioned.
It may perhaps be of interest for you that Schwartz has given a course on " Mathematics and Quantum Physics" at Buenos Aires University, end of last year, in which he applied some new results of kernel theory to the theory of elementary particles. The course can be obtained from Prof. Scarfiello, Dep. de Mathematica, Facultad de Ciencias,Peru 222, Buenos Aires,Argentine.

Thanking you very much ,I remain
very sincerely yours

Werner Güttinger

[ans 2/19/59]

Montreal Que, Sunday January 11th 1959.

Rrofessor Norbert Wiener
MAsachusetts Institute of Technology
CAMBRIDGE MASS,.

Proffessor Weiner;

I have been told by Mr. W. V. Houston, President of the Rice Institute to refere to you about the studient life of Mr. William James Sidis.

Here is some of the quotations that are written in a MAGAzine about is studient life. Mr Sidis at the age of seven years old did ~~XXXXX~~ his elementary study in five months. He finished his High School In six months and at the age of eleven, he received an invitation to give a conference about the fourth dimention at Harvard. And at the age of fifteen He was teaching at The Rice Institute.

According to Mr. W. V. HOUSTON, Mr. Sidis Was a fellow in mathematics atThe Rice Institute during the academic year of 1915-16 and that their records indicate that he was born in April, 1898.

If you could confirm or make corrections about those quotations i will be bery pleased. The revue say that he studied with a method that consists of a phonograph with a loud speeker under the pillow witch it made in study during his sleep.

M y address is: 345 Jubinville
Pont Viau
Mtl 9, Que.

Very truly Yours,

Maurice Beaulieu

Maurice Beaulieu

[ans 1/15/59]

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF MATHEMATICS
LOS ANGELES 24, CALIFORNIA

January 12, 1959

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener:

Mr. Michael Barry Marcus has given your name as a reference in regard to his application for a part-time teaching position with us in Physical Sciences Extension.

If a place becomes available, we would propose him for courses through the calculus or as an assistant for higher level courses.

We shall appreciate any comments you may wish to offer relative to his qualifications.

Sincerely,

Clifford Bell (jr)

Clifford Bell
Professor of Mathematics
Head, Physical Sciences Extension

CB:jr

[ms 2/19/59]

YALE UNIVERSITY
DEPARTMENT OF MATHEMATICS
BOX 2155 · YALE STATION
NEW HAVEN · CONNECTICUT

January 12, 1959

Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Professor Wiener,

I have read recently of the publication of ypur new book on Non-Linear Methods in Random Phenomena, and I was wondering if you might be willing to speak on these questions at the Yale Mathematical Colloquium. If you can come, I should like to extend a specific invitation for Wedensday, the 18th of March. If that date is inconvenient, another can be arranged, but I give the date above for the sake of definiteness.

I think that you would find a great deal of interest among people here in what you would have to say, especially since there is a group here very actively interested in stochastic processes.

We should be very happy to have Mrs. Wiener visit Yale, also, and will make all necessary arrangements to meet, transport, give you dinner, entertain, and house you during your stay.

With best regards,

Felix Browder

Felix E. Browder

[ans 1/15/59]

INSTITUTE FOR TEACHERS OF MATHEMATICS

Sponsored by

THE ASSOCIATION OF TEACHERS OF MATHEMATICS IN NEW ENGLAND

January 12, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

As chairman of the Program Committee for the mathematics institute conducted by the Association of Teachers of Mathematics in New England next August at the University of Rhode Island, I am writing to ask whether you would be willing to deliver a lecture to this group. We are most enthusiastic about having you take part in this project.

In order to help you decide, I am sending you a copy of a letter used to describe our program to the discussion group leaders. We sincerely hope you can be with us.

Sincerely yours,

Henry W. Syer

Henry W. Syer
Kent School
Kent, Connecticut

[ans 1/15/59]

November 20, 1958

The Association of Teachers of Mathematics in New England has held a one-week institute for teachers and professors of mathematics each August since 1949. The institute meets on a college campus and has met successively at Wellesley, Tufts, Connecticut College for Women, Exeter (Preparatory), Colby, Massachusetts Institute of Technology, Middlebury, Williams, Dartmouth, and Brandeis.

For the past five years more than two hundred and fifty people have attended each year. Excluding those attending for part time and the few spouses accompanying their husbands or wives, there have been more than two hundred teachers and professors who attended for the full-time each year. The week is one of professional inspiration for the teachers and professors.

The program follows a similar pattern each year. Each day there is a morning and an evening lecture of general interest attended by all participants. There are nine discussion and two laboratory groups meeting for one and one-half hours each day in either the morning or afternoon and so arranged that each participant may attend a maximum of three. The lectures and discussion groups are led by men and women eminent in mathematics and in the teaching of mathematics. A variety of discussion topics are planned so some will appeal to junior high school, some to senior high school, and others to college teachers.

The institute has always been self-supporting from the small registration fee charged each teacher. Lecturers and discussion group leaders have contributed their time. It is customary to pay their travelling expenses and their living expenses while they are in residence at the institute.

The 1959 institute will be held at the University of Rhode Island, Kingston, Rhode Island from August 12-19, 1959. The general chairman is Mr. George Bishop, Newport High School, Newport, Rhode Island.

Henry W. Syer and

M. Isabelle Savides

Co-chairmen Program Committee

Too busy to accept now.

ENCYCLOPÆDIA BRITANNICA
425 N. MICHIGAN AVENUE • CHICAGO 11, ILLINOIS

OFFICE OF
THE EDITOR

January
12
1959

Professor N. Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

For a forthcoming printing of the Encyclopaedia Britannica we are planning to revise and condense to 1,000 words the article FUNCTION, and include the new entry PROBABILITY, MATHEMATICAL (8,100 words).

I am writing to ask if you will be able to accept this assignment. The revised material should not exceed the specified length and the Britannica rate of payment--$5 per type page read but not substantially revised, and two cents per word for new copy--will apply. The deadline for this copy is May 1, 1959.

If you are able to accept this assignment, we shall be glad to send you paste-up of the present Britannica copy for your use.

We shall look forward to hearing from you at your earliest convenience.

Sincerely yours,

Walter Yust

Walter Yust
Editor

WY:vo-REP

THE FAMILY SERVICE OF CHESTER COUNTY

300 SOUTH HIGH STREET

WEST CHESTER, PENNSYLVANIA

PHONES:
OWEN 6- {4900 4901 4902

MELVIN N. BRENNER
EXECUTIVE DIRECTOR

January 14, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

Here is a copy of the letter I wrote to you on July 14 of this past year, and which unfortunately could not be located.

I am sorry for any inconvenience this might have caused you or your staff.

Very truly yours,

Melvin N. Brenner

Melvin N. Brenner
Executive Director

MNB:ack

Enc: 1 CC

[ans 1/19/59]

July 14, 1958

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

My readings, rudimentary at best, in the field of cybernetics, lead me to speculate that there may be a direct relationship between that field and the field of social work, in certain aspects of the theory and inquiry performed in both. Communication and control in the human being are certainly at the very heart of social casework, which is directed at assisting the individual and the family to solve problems of a psychological and sociological nature.

Even a cursory look at the fundamentals of the two fields, indicates, it would seem, a number of areas in which sharing of information, experience and ideas might serve to advance the work of all concerned.

The conception of "feed back", for example, appears to be an excellent way to describe the general adjustive pattern of an individual's performance, regarding his progress or retrogression, and I believe this perspective can have most valuable results in practical help to social work clients. On the other hand, social workers have a wealth of experience concerning people who are "malfunctioning", alone or in groups, in all kinds of environments, and concerning the effects upon this malfunctioning of various helping techniques. Patterns of behavior in psychotic individuals, for example, may yield, to a communications and control viewpoint, certain illuminating suggestions. Behavior involving hallucinations, in particular, impress me as a potential key to the understanding of sensory and perception functioning in both the abnormal and normal person, and I have often wondered whether this behavior may not be described in both psychological and organic or mechanical terms.

My main purpose in writing to you is to establish contact, so to speak. It would be most helpful for me to know the nature of other contacts so far, if any, between social work and cybernetic groups, and whether you see possible value in such meetings. What readings do you suggest for social workers? Are there regular publications devoted to cybernetics and how can these be obtained? (This last information is only partially available from a nearby university library). Are there regular meetings of any kind for those in-

terested in cybernetics, and am I, as a director of a social casework agency, eligible to attend or participate in such meetings?

I hope that my inquiry is appropriate and not inconveniencing. Your suggestions and recommendations will be most appreciated. If you wish further information from me, please do not hesitate to request it.

Very truly yours,

Melvin N. Brenner
Executive Director

MNB:ack

NEW YORK UNIVERSITY
N.Y.U.-I.C.A.-ISRAEL PROGRAM
6 WASHINGTON SQUARE NORTH
NEW YORK 3, N.Y.

TELEPHONE: SPRING 7-2000
EXTENSIONS 8227, 8165

January 15, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Mass.

Dear Professor Wiener:

We are writing to you regarding your possible interest and availability for a short term assignment as a Visiting Professor to the Hebrew University in Jerusalem, Israel. This assignment would be with our team in Israel which, under a contract with our State Department, is busily engaged in curriculum development work at both Hebrew University and the Israel Institute of Technology (Technion).

This request was initiated by our Chief of Party in the field, Professor Theodore Lang, in conjunction with the authorities at Hebrew University. There has been an ever increasing interest in cybernetics, more specifically in your famous work Cybernetics: Communication and Control in the Animal and the Machine. The following is quoted from a letter just received from Professor Lang in reference to yourself and the fields of cybernetics and communication in Israel.

> "We are most anxious to request Professor Norbert Wiener. His purpose would be to work with the Hebrew University teaching staff and their most advanced students in Cybernetics and Communication Theory. These two closely related fields are of great importance to the development of the business administration program. At the moment there is no one here who knows enought about either of these fields.
>
> If Professor Wiener could be obtained for a two-month period, at least two people would be selected, one of whom would be Professor Gross, to work with him intensively. In addition to that Professor Wiener could give a seminar for some of the faculty members to be chosen from the departments of Psychology, Mathematics and Economics."

NEW YORK UNIVERSITY
N.Y.U.-I.C.A.-ISRAEL PROGRAM

We would be very pleased to have you go to Israel as a short term Visiting Professor for such a period of time as your schedule would permit. This might be anywhere from one to three months depending upon the program which you think would best serve their needs. As to the months in question, May, June and July would be good, or if not possible, perhaps in the fall as an alternative. I do feel that the compensation, allowances, and travel arrangements which we might agree upon will be to your satisfaction. I do wish to thank you for your consideration of this proposal and trust that you may be able to give a favorable reply.

Sincerely yours,

B. Bernard Greidinger

B. Bernard Greidinger
Coordinator

BBG/jf

[ans 2/20/56]

January 15, 1959

Mr. Maurice Beaulieu
345 Jubinville
Pont Viau
Montreal, Quebec
Canada

Dear Mr. Beaulieu:

Your reports on Sidis are correct as far as I know and are probably completely correct. I knew him very well and I greatly regretted his early breakdown and his early death.

Sincerely yours,

Norbert Wiener

NW:mmk

January 15, 1959

Professor Felix E. Browder
Yale University
Department of Mathematics
Box 2155 Yale Station
New Haven, Connecticut

Dear Professor Browder:

I should be very glad to come with my wife for your meeting on Wednesday, the 18th of March. I have a lot to talk about concerning my book and I may have even new material not in the book by that time.

Sincerely yours,

Norbert Wiener

NW:mmk

[ans 3/3/59]

January 15, 1959

Professor J. C. Dillon
Head, Engineering Extension
Department of Engineering
University of California
Los Angeles 24, California

Dear Professor Dillon:

The date for my lectures for July 6 - 17 is excellent. I suggest that the title for the course be Nonlinear Problems in Random Theory. I shall use my book on the subject as textbook or as collateral reading.

I should regard as the minimum prerequisites for the course (naturally with exceptions in the case of outstanding students) graduate status in mathematics, physics, biology, or electrical engineering and at least one good foundation course in real variables, harmonic analysis, or probability theory.

You may take as the description of the course the statement in the preface of my book.

I am enclosing the biography signed as you requested.

Sincerely yours,

Norbert Wiener

NW:mmk
Enclosure

UNIVERSITY OF CALIFORNIA — UNIVERSITY EXTENSION

COURSE PROPOSAL

DEPARTMENT Mathematics SIGNED BY Clifford Bell DATE February 16, 1959

TITLE Nonlinear Problems in Random Theory NO. X 497AB SEC.

TEACHER'S NAME Norbert Wiener DEGREES Ph.D.

POSITION Professor of Mathematics FIRM Massachusetts Institute of Technology

BUSINESS ADDRESS Cambridge, Massachusetts BUSINESS TELEPHONE

HOME ADDRESS 53 Cedar Road, Belmont, Massachusetts HOME TELEPHONE

COMP. RATE - - - TOTAL COMP. - - - TRAVEL RATE - - - TOTAL TRAVEL - - - TOTAL *$2,000.00 includes travel Boston to L.A. and return.

DESCRIPTION OF COURSE:

The course will include the random function of time and phase; homogeneous polynomial functionals and their averages; orthogonal functions; orthogonal functions and autocorrelation functions; application to frequency-modulation problems; application to the study of brain waves, random time, and coupled oscillators; some thoughts on quantum theory; nonlinear systems; coding; decoding; a new approach to statistical mechanics.

PREREQUISITES: Graduate status in mathematics, physics, biology, or engineering; and at least one good foundation course in real variables, harmonic analysis, or probability theory.

TOTAL MEETINGS 10 UNITS 2 FEE $150.00

AREA Los Angeles MEETING PLACE Room 4660 Geology Building LOCATION U.C.L.A. campus

DAY Monday through Friday TIME 8 a.m. to 5 p.m. MAKE-UP MEETINGS none

BEGINS July 6, 1959 ENDS July 17, 1959 HOLIDAYS None

HOURS PER DAY 8 DAYS PER WEEK 5 TOTAL WEEKS 2 TOTAL HOURS 80

TEXT: TITLE	AUTHOR	PUBLISHER	QUANTITY ORDERED

SCHEDULE COPY PUBLICITY EQUIPMENT

OTHER ITEMS:

*Please see special budget dated 2/16/59
Full time assistant (80 hrs. at $5.00) total $400.00

EXTENSION USE ONLY

COURSE APPROVAL
OATH
ROOM PERMISSION
BUDGET
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INFO. CARDS
PUBLICITY
FINAL PROOF
SPECIAL CLEARANCE
APPLICATION-FOR-ENROLLMENT CARDS

January 15, 1959

Mr. Jason Epstein
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Jason:

Many thanks for your letter of January 9th. The copying of the book is progressing rapidly without hitches and I shall certainly be able to get it to you sometime early in February.

I don't think that it will be appropriate to treat the book as a diary with entries at each date. This would involve very considerable re-writing as I have coneived it not as a record of James' activities day by day but rather as a report written much later at a time at which the dates of the individual records would have been lost. This is important, particularly in view of the contemplative passages which you so much wished me to write. They would be matters clear in afterthought, but not matters which it would be possible to write at the time with the full impact. I think we shall have to use another solution.

Sincerely yours,

Norbert Wiener

NW:mmk

[ans 1/19/59]

January 15, 1959

Mr. Ali Irtem
P. K. 670
Ankara, Turkey

Dear Mr. Irtem:

The fruit arrived two days ago and came in good condition. It is delicious and of the first quality. I want to tell you my appreciation of your kindness and thoughtfulness.

In my letter of August 15, 1958, I mentioned my new book. It came out in December, published by The Technology Press and John Wiley. The title is "Nonlinear Problems in Random Theory."

Thank you again for the fruit. With best regards from myself and my wife.

Sincerely yours,

Norbert Wiener

NW:mmk

January 15, 1959

Mr. C. E. Persons
26731 Taafe Avenue
Los Altos, California

Dear Mr. Persons:

In answer to your letter of December 6, 1958, what you say is quite correct. It was an oversight on my part although the fundamental fact is that the meeting failed because of a lack of proper orders from England. I think that my statement can be read either way but I admit it was carelessly formulated.

Sincerely yours,

Norbert Wiener

NW:mmk

January 15, 1959

Mr. Henry W. Syer
Kent School
Kent, Connecticut

Dear Mr. Syer:

I am very sorry that I will not be able to accede to your request to address the Institute for Teachers of Mathematics next August. The fact is that I have an engagement in July to go to California and lecture at U.C.L.A. and I shall need what is left of my vacation to rest up for next year.

Thank you for the invitation.

Sincerely yours,

Norbert Wiener

NW:mmk

RANDOM HOUSE INC.
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January 19, 1959

Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Norbert:

I am delighted that the book will certainly be here early in February. My colleagues are now as interested as I am to see the finished product and to make it ready for the press. I see no reason for us not to count on publication in September. And this reminds me that you said something to me about your going to Russia at some point. Will you be out of the country at the time of publication? If you will, let me know your schedule and I will try to adjust publication date so that the book will come out while you are still in the country.

As for my suggestion that you break the text up by means of dates as in the case of a diary, I know that the material is not arranged in a simple chronology, but the text does have a generally regular forward direction. As I recall, there are very few specific dates given in the text and it might help the reader if the material were broken up in sections covering three, four or five year periods. This would help to orient the reader, as well as to provide you with breathing places in the narrative. That is, I don't mean for you to include the specific dates on which various parts of the story took place, but references to the years in which various parts of the action took place would be useful,

Sincerely,

Jason Epstein

JE/id

Best wishes from us to Margaret

[ans 2/13/59]

HARVARD UNIVERSITY

136, Curtis Street,
Medford, Massachusetts.

January 19,1959.

Professor Norbert Weiner,
Professor of Mathematics,
Massachusetts Institute of Technology,
Massachusetts.

Respected Sir,

My friend Mr. Mohammad Anwer, from Pakistan, has given me to understand that he sent you a mathematical paper under the title, 'The ideas of Denumerable Sets and Measure' soliciting your very valuable criticism thereon. He further directs me to find out if you could spare some of your very precious time to look into the same.

In view of the above I take the liberty of approaching you through this letter and request you to very kindly inform me as to your views, if any, on the above mentioned, which I shall duly communicate to my friend in Pakistan.

I am very concious of having encroached upon your invaluable time and solicit your forgiveness.

Thanking you,
Sincerely,

Hayat Mehdi

(Hayat Mehdi).
136, Curtis Street,
Medford, Massachusetts.

[ms 2/17/59]

36621 Bibbins Street
Romulus, Michigan
January 19, 1959

Mr. Norbert Wiener
53 Cedar Rd.
Belmont, Massachusetts

Dear Mr. Wiener:

Having recently read the article " WHAT WORRIES YOU MOST ABOUT AMERICA TODAY " in the February issue of Esquire Magazine some questions have entered my mind about your statement. What do you actually mean by intellectual work and intellectual integrity? Would it be possible for you to give me information concerning articles or books you have written on this subject so I could get a clearer understanding of the subject.

Being a mathematics professor at America's greatest engineering school I know you must be a very busy man but I would appreciate a reply to this letter if you could find time.

Sincerely yours,

Douglas C. Roach

[ans 2/18/59]

19 January 1956

Dear Prof Wiener:

First let me thank you for troubling to address a few remarks upon reading my article "The Electronic Computer - a Learning and Thinking Machine".

Would you be surprised to learn that the arguments presented in that article which you characterized as "quite valid", are not at all obvious to many referees? In short, I failed to secure having it published because of the "fantastic" nature of the claims.

However, I shall attempt to have the enclosed article published in spite of previous rebuffs. Before so doing, I'd like to receive whatever

comments you would care to make. I hope my request does not impose upon you too greatly.

Very sincerely,

Marvin Schwartz

P. S. You may keep or return the enclosure as you see fit.

MARVIN SCHWARTZ
264 MORTON AVE.
ALBANY 2, NEW YORK

[ans 2/17/59]

THE INSTITUTE OF RADIO ENGINEERS
INCORPORATED

PROFESSIONAL GROUP CORRESPONDENCE

January 19, 1959

PLEASE ADDRESS
REPLY TO

Hughes Aircraft Company
Culver City, California

Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

Peter Elias has told me that you will not be able to accept our invitation to speak at the banquet of the International Symposium on Circuit and Information Theory, to be held at Los Angeles on June 16-18, 1959. Let me say that we all very much regret that we will not have the pleasure of having you here, I the moreso since I did have the pleasure of hearing your most interesting talks at the banquets of the Information Theory Symposia in 1954 and 1956.

However, I should like to express our thanks to you for giving our invitation your consideration.

Yours truly,

G. L. Turin

George L. Turin, Chairman
Technical Program Committee
1959 ISCIT

GLT:ib

January 19, 1959

Professor E. J. Akutowicz
Mathematiska Institutica
Uppsala, Sweden

Dear Akutowicz:

I am wondering if you could possibly have the manuscript entitled "Harmonic Analysis and Random Time Functions" by the late Aurel Wintner and myself. I seem to have misplaced it and need to find it very badly.

Wishing you success in Sweden, I am,

Sincerely yours,

Norbert Wiener

NW:mmk

[ans 1/24/59]

January 19, 1959

Mr. Melvin N. Brenner
Executive Director
The Family Service of Chester County
300 South High Street
West Chester, Pennsylvania

Dear Mr. Brenner:

I am sorry that the earlier letter was lost. Your letter reaches me just as I am about to take a between terms trip. When I come back early in February I shall give the matter my attention.

Sincerely yours,

Norbert Wiener

NW:mmk

January 19, 1959

Mr. Jason Epstein
Random House Inc.
457 Madison Avenue
New York 22, New York

Dear Jason:

My manuscript is about a third copied and I shall have my secretary send it to you early in February, either before or after I return from my trip. My wife and I shall be in New York the first week in February and hope to get a chance to look you up.

I have great hopes that you will like the manuscript. As you know, it is very hard to estimate the number of words until I have a clean copy. But my guess at present is that my manuscript will not exceed 80,000 words except possible by a trivial amount. It may even be less.

We are looking forward to seeing you.

Sincerely yours,

Norbert Wiener

NW:mmk

January 19, 1959

Dr. Iago Galdston
The New York Academy of Medicine
2 East 103 Street
New York 29, New York

Dear Iago:

I hope to be in New York with my wife the first week in February and I shall make every effort possible to look you up. Things are going well with us and we will have a lot to talk over.

Looking forward to seeing you.

Sincerely yours,

Norbert Wiener

NW:mmk

January 19, 1959

Professor E. J. McShane
Department of Mathematics
University of Virginia
Charlottesville, Virginia

Dear Professor McShane:

My wife and I are taking an inter-term trip down to Florida and may possibly pass through Charlottesville. If we do, I should like the opportunity for a brief talk with you concerning the work I have underway, and particularly concerning the impressions you have of my book.

I shall try to get in touch with you in passing through, but there is not time for me to receive a letter from you unless you would care to write to:

Norbert Wiener
c/o Dr. Dale Hooper
Veteran's Hospital
Coatesville, Pennsylvania

Hoping to see you, I am,

Sincerely yours,

Norbert Wiener

NW:mmk

[ans 1/29/59]

January 19, 1959

Professor Bayard Rankin
Department of Mathematics
Case Institute of Technology
10900 Euclid Avenue
Cleveland 6, Ohio

Dear Rankin:

I have received your letter of January 9th and as soon as I have received your preface, I shall give it the once-over with any criticisms I have. As to the mathematicians to view the book, I should particularly like Mark Kac and Feller. Another man we should try to get for foreign contacts is Paul Levy of the Ecole Polytechnique in Paris. Grenander and Dube will be very good and I suggest Cramer in Sweden as well.

Did I by any chance send you ajoint manuscript by the late Aurel Wintner and myself entitled "Harmonic Analysis and Random Time Functions"? It would have been about eight or nine months ago. I have mislaid it and need to find it very badly.

Sincerely yours,

Norbert Wiener

NW:mmk

January 19, 1959

Dr. S. Schulz
Evangelische Akademie
Hofmannstr. 85
Erlangen, Germany

Dear Dr. Schulz:

I regret very much that I will be unable to participate in your symposium from the 30th of August to the 2nd of September of this year. The fact is that I am quite tired at present and that I need the summer months for recuperation. I wish you all success in your project and feel very sympathetic towards it.

Sincerely yours,

Norbert Wiener

NW:mmk

January 19, 1959

Mr. Theodore Shedlovsky
The Rockefeller Institute for Medical Research
66th Street and York Avenue
New York 21, New York

Dear Shedlovsky:

I hope to be in New York with my wife the first week in February and I shall make every effort possible to look you up. Things are going well with me and we will have a lot to talk over.

Looking forward to seeing you.

Sincerely yours,

Norbert Wiener

NW:mmk

ARTHUR DYE
20 SOUTH TWELFTH STREET
PHILADELPHIA 7, PA.

I share/do not share your concern.

Please send program information _____.

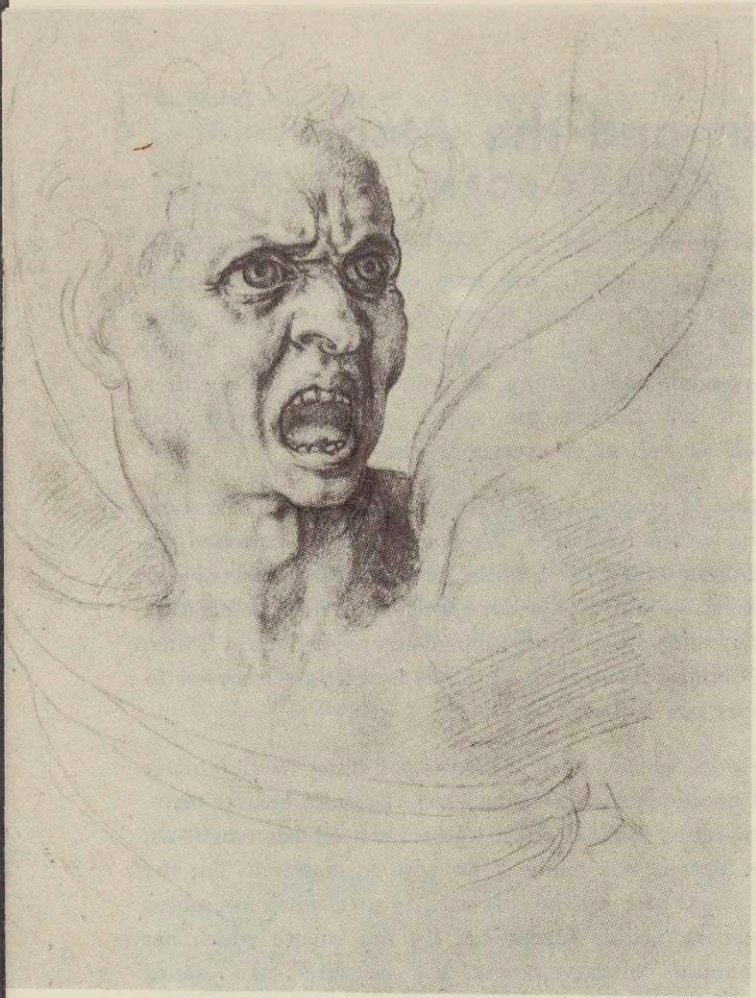
I would accept speaking engagements at our mutual convenience. Yes____ No____

I would meet with others of like mind to consider ways and means of contributing to "the education of peoples".
Yes____ No____

Name _____

Address _____

_____



After Michelangelo
Head of the Lost Soul

MAN and the ATOM

by MAX BORN

INTRODUCTION

By Victor F. Weisskopf
Professor of Physics, Massachusetts Institute of Technology

Professor Max Born is one of the few men who conceived the great ideas upon which rests our fundamental knowledge of the laws of nature. He was one of the men who discovered the strange laws of quantum mechanics which govern the microscopic world of the atom and the electron. In 1955 he received the Nobel prize for this work. His scientific discoveries are only a part of his achievements. He is well known as an inspiring teacher and team leader. Every student of physics reads his books, and the list of his pupils and collaborators includes the most brilliant physicists of all countries, such as Oppenheimer, Teller, Heisenberg, Condon, von Neumann and many others.

Everybody who had contact with him remembers him not only as a brilliant scientist but also as a man of human warmth and greatness. The problems of mankind are as pressing to him as the problems of the atom. In the following article he addresses the world from the place of his retirement after many years of struggle against the secrets of nature and the injustices of men. It is a warning against the misuse of mankind's great discoveries and an appeal to every one for clearer thinking and acting in the struggle against self destruction. It is an optimistic appeal of a man who has seen much evil and abuse but who never lost his belief in a brighter future of mankind.

Man and the Atom

By MAX BORN

TO begin with a special case, let me say a few words about "Myself and the Atom." We, the atom and I, have been on friendly terms, until recently. I saw in it the key to the deepest secrets of Nature, and it revealed to me the greatness of creation and the Creator. It supplied me with satisfactory work, in research and teaching, and thus provided me with a livelihood. But now it has become the source of deep sorrow and apprehension, to myself as well as to everybody else.

Since the destruction of Nagasaki and Hiroshima the atom has become a specter threatening us with annihilation. We ourselves have exorcised the phantom, it has served us faithfully for a while, but now it is insubordinate. How has this come about? Should we not have anticipated that the creature bred by us could one day outgrow us and become dangerous? Would it then not be better to have nothing to do with it? Or is it still in our power to tame it and to use it as our servant?

These are the questions which I wish to discuss and to try to illuminate: They are fundamental questions for the human race. I cannot answer them, but I can express a few ideas, some of which the atom itself has taught us; we have to keep these ideas in our minds if we wish to master it. For the word "atom" does not stand here for the tiny particle that, when assembled in large numbers, exercises terrible forces, but for the science which has discovered this particle and its collective power. And the word "man" stands not only for the rational being that has created atomic science and harnessed atomic power, but also for the man in the street, who knows nothing of all that and who reads in his newspapers of a danger which he does not understand.

I HAVE TO DEAL WITH HUMAN PROBLEMS

In fact, it is only a manner of speech to say that the atom has become dangerous, or that the atomic physicists have brought its danger into being: The source of the danger is in all of us, because it is the weakness and passion of ordinary human beings.

Therefore, the physical and technical aspects will play only a small part in my considerations. I have to deal with human problems, both historical and political. However, I am a physicist, and in thinking about history and politics I cannot help using methods which I have learned in my science. True science is philosophical; physics, in particular, is not only a first step toward technology, but a way to the deepest layers of human thought. Just as three hundred years ago physical and astronomical discoveries dethroned

medieval scholasticism and opened the way for a new philosophy, today we are witnessing a movement which, starting from apparently insignificant physical phenomena, leads to a new turn in philosophy. It is just this way of thinking, rooted in atomic physics, that may contribute to an understanding of the dangers of the atomic age and thus to preventing them.

Fatal dangers they certainly are: The human race has today the means for annihilating itself — either in a fit of complete lunacy, i.e., in a big war, by a brief fit of destruction, or by careless handling of atomic technology, through a slow process of poisoning and of deterioration in its genetic structure.

COULD THIS CRISIS HAVE BEEN AVOIDED?

Was this development unavoidable? Were human beings not able to live very well without probing into the mysteries of the structure of matter which led to the danger of self-destruction? In more general terms: Is technical progress, based on the knowledge of natural laws, an inescapable necessity, like a law of nature itself?

If this should be true, what sense could there be in our endeavor to direct it and to give it a reasonable purpose? Should we not better accept a fatalistic attitude and live gaily from day to day? . . .

Averaged over all the nations of the earth, the increase in the degree of civilization is undeniable. From 1700 on, it has become rapid and breathtaking. In the end, it has led to the discovery of atomic forces and of nuclear energy, and, in this way, to a crisis in the life of the human race.

In my opinion, . . . the question whether this crisis of existence could have been avoided must be answered with a clear "No." A short review of the history of atomic science will corroborate this conclusion. . . .

In 1938, Hahn and Strassmann found that when a uranium isotope absorbs a neutron it becomes unstable and splits into two parts of almost equal size. The detailed investigation of this "fission" process revealed that a few neutrons are emitted at the same time; if other uranium nuclei are hit by these neutrons, a chain reaction results which sets free an enormous amount of energy.

In 1942 a group of physicists in Chicago led by Enrico Fermi succeeded in constructing a reactor (or "pile") in which this process went on in a controllable manner.

At this point, I am tempted to allow some free play to my imagination: How would things have turned out if there had been no war at that time? I presume that everything would have gone in essentially the same way,

though somewhat slower. The first reactor might have been built 5 or 10 years later, somewhere in the civilized world. The politicians and military leaders would, of course, have gotten wind of the thing. But the difficulties and expenses of producing an atomic bomb are so gigantic that it may be doubted whether anything would have been achieved without the acute pressure of war. The Western parliaments would have hesitated before voting colossal sums for a project the feasibility of which could only be proved on paper. There might have been time to consider the consequences and to attempt an international arrangement for avoiding the danger of atomic war.

A HISTORICAL ACCIDENT

But it did not happen like that. The process was accelerated by a historical accident, like a chemical reaction by a catalyzer. The accident consisted in the fact that the discovery of nuclear fission was made in Germany during the initial period of national-socialistic rule.

I had to leave Germany, like many others, and I have witnessed the terror which engulfed the rest of the world when Hitler's initial successes made it appear possible that he might subjugate all the peoples of the world. If Germany were able to construct an atomic bomb before the other nations there was no salvation. Even Einstein, who had been a pacifist all his life, shared this fear and was persuaded to warn President Roosevelt. That was the beginning of a startling development. Enormous means were provided, a gigantic organization was created, and the best scientific and technical brains set to work. The result was the first explosion of an atomic bomb at the experimental station at Alamogordo in the United States (July 1945).

Up to this point everything went quite "normally," in view of the political situation: The politicians and soldiers were acting with circumspection according to their duty; and the physcists, chemists, and engineers did their national service at the place where they were most useful; they were having unlimited means available for the investigation of a new, fascinating branch of science and were promoted in the social scale to the rank of VIP's.

THE TRAGIC TURN

The tragic turn was the decision to use the new weapon by dropping two bombs on densely populated Japanese cities. Who was responsible for this decision? President Truman gave the order after listening to many advisors. Amongst these were not only politicians and soldiers but also leading scientists. It is true that a group of atomic scientists gave warning and correctly predicted the consequences in a report sent to the Secretary of War;

the report bears the name of the chairman of the committee, James Franck, my old friend and colleague from bygone peaceful times in Göttingen. But another group of eminent physicists were in favor of the dropping of the bombs.

I have used the word "responsibility" — not "guilt." For who would be presumptuous enough to judge men who, under the stress of war, acted according to their best knowledge and conscience? The justification for the horrible decision which is usually offered is that it speeded up the end of the war and saved the lives of hundreds of thousands of soldiers, not only Americans but also Japanese. Not mentioned are the hundreds of thousands of Japanese civilians — men, women, and children — who were sacrificed. Or, if they are mentioned, it is said that their destruction was not essentially different from what all belligerents were doing in ordinary air attacks. And, indeed, nobody can deny this. But can a big crime be justified by the statement that we are accustomed to committing many smaller crimes?

OUR COLLECTIVE GUILT

I am not afraid to use the word "crime," but I shall not call any single person a criminal. What we are concerned with is collective guilt, the decay of our ethical consciousness, for which we are all to blame, myself included — though I have had nothing to do with the development of nuclear physics. A few of my colleagues in different countries will agree with me, but many more will contradict me sharply and say: "That is sentimental nonsense"; or "you have to serve your country and not ask questions"; or "you have convinced yourself that all this has been a necessary development, hence spare us your moral indignation."

The last objection is a serious one: how can you speak about guilt and collective crime when you have recognized the inevitability of the development from the savage with bow and arrow to the airman with an atomic bomb? . . .

THE DUAL NATURE OF THE WORLD

We believe in natural laws and rely on their validity in everyday life. But we human beings are part of Nature and subject to her laws. Therefore, what we do should be just as predetermined as any natural process. But we regard ourselves as creatures capable of forming opinions and of acting on the basis of free decisions; we therefore pass judgment on human actions, calling them good or bad, just or unjust. How can we do this if every human action is nothing but a part of predetermined, automatic process? The contradiction seems insoluble. Only two possibilities seem to exist: either one must believe in determinism and regard free will as a subjective

illusion, or one must become a mystic and regard the discovery of natural laws as a meaningless intellectual game. Metaphysicians of the old schools have proclaimed one or the other of these doctrines, but ordinary people have always accepted the dual nature of the world. Bohr's idea of complementarity is a justification of the common people's attitude, because it directs attention to the fact that even a rigorous science like physics has reconciled itself to the use of complementary descriptions, which provide a true image of the world only when they are combined.

I am convinced that Bohr is right, and therefore I am not afraid to regard certain features of human history as governed by laws, and at the same time to speak of responsibility and guilt. . . .

A SECRECY ILLUSION

During the eleven years since the first atomic explosion, the alliance directed against Hitler has dissolved and the cold war started between the two groups of states which are usually called the East and the West.

How little the essence of scientific knowledge has penetrated into men's consciousness, was revealed by the period that followed the end of the war. Many American politicians believed that the technical advantage of the West could be preserved by secrecy. The effect of this was to hinder the progress of research on their own side and, through the ensuing witchhunt, to bring about a serious danger to those civil liberties which are the pride of their country. Nothing could prevent the Russians from confirming a known fact of nature and from exploiting it technically. The explosion of their first uranium bomb in 1949 broke the American monopoly, and when the development of the hydrogen bomb began, the Russians drew level with the West.

LESS CLEVERNESS AND MORE WISDOM

The hydrogen bomb is based on quite a different nuclear process from that used in the uranium bomb, for instead of the fission of heavy nuclei use is made of the fusion of light ones: a helium nucleus is produced from two protons and two neutrons. It is well known that this reaction is the source of the energy of the stars, which they radiate into space. It is the process which keeps the sun shining and so makes life on earth possible. In the central regions of the stars, temperature and pressure are so high that the fusion process goes through a chain of intermediate reactions. Similar conditions of temperature and pressure can now be produced on earth by using a uranium bomb for ignition, and the result is the so-called themo-nuclear explosive device. The energy set free in such an explosion can be a thousand times greater than in the case of a uranium bomb, and it is possible

to make bombs of any size, and comparatively cheaply. The hydrogen bomb is an absolutely devilish invention, and there was opposition to its manufacture in the USA. The man who had directed the production of the first uranium bomb, Robert Oppenheimer, tried to resist the production of the hydrogen bomb, but without success. . . . The principal promoter of the hydrogen bomb was Edward Teller, who not only developed its theory, but also agitated for its production. Thus he has inscribed his name in the book of world history — whether on the debit or on the credit side the future will reveal. Teller's own justification, of course, is this: if we do not make this bomb, the Russians will. As a matter of fact, the first H-bomb explosion in Russia took place only a short time afterwards. Both of these men, Oppenheimer and Teller, as well as Fermi and other participants in this work, including some of the Russian physicists, were once my collaborators in Göttingen long before all these events, at a time when pure science still existed. It is satisfying to have had such clever and efficient pupils, but I wish they had shown less cleverness and more wisdom. I feel that I am to blame if all they learned from me were methods of research, and nothing else. Now their cleverness has precipitated the world into a desperate situation.

NOT MUCH WOULD BE LEFT

Both camps, East and West, have a sufficient number of bombs to destroy mutually all big cities and industrial centers with the help of airplanes and of guided and ballistic missiles. I shall make no attempt to compete with novel writers and journalists in describing the horror of atomic war. Yet, it is necessary to remember that the unrestricted application of atomic weapons would lead not only to the destruction of definite targets, but also to the radioactive poisoning of the atmosphere, which will spread over the whole globe. Even the few experimental bombs which have been exploded for "research" purposes in remote corners of the earth have increased the radioactivity of the atmosphere significantly. After actual nuclear warfare, not much would be left of our civilization. The survivors of the bombs would suffer agonizing death through radiation sickness: friend and enemy, belligerent and neutral, man, animal, and plant.

The leading statesmen of the big atomic powers are in the habit of declaring that a great war has become impossible. But neither their own Foreign Offices, nor the governments of smaller states take much notice of such declarations. The old diplomatic game, the bargaining and quarreling about small advantages, continues as if nothing had happened. The reluctance of the Great Powers to be involved in serious conflict is used by smaller nations for blackmail. East and West are pursuing atomic armament because they distrust one another and are under the illusion that they can gain

security by intimidation. The word "war" is avoided, but warlike actions, the breaking of international law, and the application of brute force, are perpetrated under other names — as we have recently witnessed in Hungary and in Egypt.

SUCH IS THE CRAZY SITUATION

Immensely expensive preparations are constantly being made for a war which must under no circumstances be allowed to come about.

Such is the crazy situation in which we find ourselves. It looks as if our civilization were condemned to ruin by reason of its own structure. . . .

There is no doubt that the human race is in an acute crisis. At the present time, fear alone enforces a precarious peace. However, that is an unstable state of affairs, which ought to be replaced by something better.

THE ONLY WAY OUT

We do not need to look far in order to find a more solid basis for the proper conduct of our affairs: it is the principle which is common to all great religions and with which all moral philosophers agree; the principle which in our own part of the world is taught by the doctrine of Christianity; the principle which Mahatma Gandhi had actually carried into practice, before our own eyes, in liberating his own country, India, from foreign domination: it is the renunciation of force in the pursuit of political aims.

Fifty years ago, when I was young, this statement would have been regarded as utopian and foolish. Today, I am able to express it without raising doubts as to my sanity. It is very likely that tomorrow, not the pacifists, but the bellicose will be regarded as fools, for the experiences of the last fifty years have left an impact on the minds of men. Yet, I feel unequal to the task of analyzing and discussing this immense problem in all its aspects. What would I be able to add to the words of the great poets and prophets of our time? I have in mind the address given by Albert Schweitzer when he received the Nobel Peace Prize; the declaration published by Albert Einstein, a short time before his death, together with Bertrand Russell and other scholars of many nations; the Mainau manifesto signed by 52 Nobel laureates; and many other similar declarations. Today, these voices no longer die away unheard, for the man in the street — and perhaps also some of the great of this world — listen to them.

SOME WHO ARE CAUGHT IN THE GEARS

I am not blind to the difficulties of current policies: the conflict of interests and the clash of ideologies, of races, and of religions. But when in

human history have such problems ever been solved by war? Usually, one war has only led to the next one. Is there any possible political aim which would justify the risk of atomic war? There are a great many politicians and journalists who reply to the warnings of the experts with catchwords such as "atomic hysteria," and "bomb defeatism." Such politicians and journalists are either shortsighted, or fanatics and therefore evil, or else they represent one of the numerous groups of people to whose advantage it is — or seems to be — that wars be prepared for, or even fought: Such people are the industrialists who profit from the production of armaments; soldiers who like military life with its romantic tradition, and who prefer blind obedience to personal responsibility; officers, generals, admirals, and air marshals, whose profession is the preparing and fighting of wars; and, lastly, physicists, chemists, and engineers, who invent and manufacture new kinds of weapons. It is impossible to stabilize the present state of precarious peace based on fear, without giving these people other aims in life.

There is no general recipe for doing this. However, I am able to say a few words about the physicists, whose mentality is known to me. . . . The physicists are not the mysterious, sinister figures they are represented to be in a certain popular literature, but ordinary people gifted with a particular talent. Their ethics have nothing to do with their science. They regard as good what is beneficial to their country, just as all other citizens do. But at the same time they are strongly conscious of a particular mission — and this leads me to a question of supreme importance which I have so far omitted from my consideration.

CREEPING DANGERS

The discovery of nuclear energy is not only a threat, a danger to the existence of mankind, but also the means of deep penetration into the secrets of Nature, and thereby of technical progress. It is, indeed, without exaggeration, the salvation of human civilization from another creeping danger, namely, the exhaustion of the fossil fuels — coal and oil.

The atomic reactors produce not only explosives but also two other things which are of the utmost importance: radioactive isotopes and energy.

A discussion of radioactive isotopes would be beyond the scope of this article, and therefore I shall say only a few words about them. As far as I can see, there are four important fields for the application of radioactive isotopes: (1) As natural clocks in the investigation of geological, cosmological, and archaeological chronology. (2) As highly sensitive indicators or "tracers," to show the presence and the movement of various substances in physical, chemical, metallurgical, and physiological processes. (3) As a means of accelerating the rate of mutations and thereby producing

new species of organisms for theoretical study of genetics and practical use in agriculture. (4) As a powerful tool in medical diagnosis and therapy, particularly in the treatment of cancer. Each of these fields has been revolutionized by the use of isotopic methods; much has been achieved already and much more can be expected. But all this belongs only indirectly to my subject.

The question of energy production, however, bears on my subject directly. Our civilization rests entirely on the exploitation of the fossil fuels, coal and oil, with a small contribution from water power. These fuels are at present still being produced — or rather, extracted — from their limited deposits in sufficient quantity. But the day is approaching when the output will not equal the demand. In spite of numerous wars, the number of human beings has increased tremendously during the last 150 years, in a roughly exponential manner, with a doubling period of about 100 years, as the following figures show:

In the year	1800	1850	1900	1950	
existed about	900	1250	1600	2500	million people.

The demand for energy — and that for foodstuffs too — must increase at least at the same rate, and actually increases considerably faster than the world population, since the populations of vast territories, mainly in Asia and Africa, still live under conditions which lag far behind those of the more advanced countries, and are keen to catch up.

Since the total store of fuel is limited, one needs no great gift for prophecy to predict the approach of a fuel crisis for civilized man.

JUST IN TIME — IF . . .

How the long-term problem of the supply of food is to be solved, is probably unknown even to the experts in nutrition; but as to the problem of the supply of energy, the discovery of methods for liberating nuclear energy has come just in time to avert a catastrophe. The deposits of uranium and thorium are sufficient for many generations, even if the demand for energy, made by the backward nations, should increase to the level of those made by the Europeans, Americans, and Australians. Vigorous research is also being made into the problem of how to make the fusion of hydrogen a controllable reaction; the raw material for this process is available in unlimited quantity. The technical difficulties, such as the removal of radioactive waste products, are great, but presumably surmountable.

The atomic physicists are conscious of their responsibility for this development, without which our civilization would collapse miserably from lack of energy; and they are working devotedly in order to solve the scien-

tific, technological, economical, and social problems connected with the new source of energy. But these special problems are outside my subject, which is how mankind as a whole is reacting to the new situation.

THE KEY — ON ONE CONDITION

It is as if fate were putting man to the test, saying to us: You want to live, to increase in number, and to improve your conditions — I am giving you the key to your future, but on one condition: that you give up your quarrels, suspicions, and brute force. If you refuse, woe betide you.

Will the warning be heeded? . . .

Amongst Christians . . . it should be sufficient to take the teaching of Christ seriously and to measure good and bad not with a national, but with a human gauge. Never in history was this demand so pressing, never the punishment for refusing it so obvious.

These considerations have naturally led to powerful propaganda for the abolishment of nuclear weapons by international agreement. To be frank, I do not think much of these efforts. For even if a war between Great Powers should break out and be conducted initially with conventional weapons — with increasing stress, no nation can be expected to renounce the use of any weapon it may see necessary for its salvation. In fact, military leaders in the USA have declared they would not wait for extreme emergency, but that in case of attack, they would strike at once against the Eastern bloc with nuclear weapons. I am convinced that the only way to avoid general destruction is the general renunciation of the use of force in political conflict, combined with progressive disarmament. Instead of the propaganda for the prohibition of atomic weapons, I recommend a vigorous campaign of enlightenment about the nature of total war. The beautiful idea of the hero who fights and dies for his country, his wife, and his child, is out of date. Very likely, wife and child will be victims of the atomic bomb long before the soldier, who is better protected in his dug-out or tank; and the mother country, after being saved from aggression, will look like a landscape on the moon.

THE IRON LAW OF NATURE

Now if we assume that in the future the Great Powers will avoid war, at first from fear, and later perhaps from better motives; and that they will prohibit or at least restrict warlike conflicts between minor nations: what kind of a peace will it be?

Hardly a comfortable peace, a paradise on earth, of which I, like many others, have often dreamed. Even if organized and industrialized mass

murder should be stopped, there will be no end to conflict, because of the iron law which Nature has decreed for all living beings. Science and technology will then follow their tendency to rapid expansion unhampered, and in an exponential fashion, until saturation sets in. But that does not necessarily imply an increase of wealth, still less of happiness, as long as the number of people increases at the same rate, and with it their need for food and energy. At this point, the technical problems of the atom touch social problems, such as birth control and the just distribution of goods. There will be hard fighting about these problems; if not with deadly weapons, then with the more civilized weapons of the mind. Even if the specter of the atomic bomb is successfully exorcised, the specter of the exponential growth will see to it that a completely carefree and restful life will never be achieved. In the background, there will always be the danger of self-destruction through the release of nuclear energy, as punishment for relapse into political barbarism.

We have just witnessed with horror such a relapse. For once, we have been saved by the reaction of public opinion throughout the world: public opinion — that means ourselves. And every one of us can contribute to its becoming more powerful every day.

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UNIVERSITY OF MINNESOTA
COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS
MINNEAPOLIS 14

DEPARTMENT OF MATHEMATICS

January 20, 1959

Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Professor Wiener:

Would you please give me a frank evaluation of the research ability and promise of Professor Pesi R. Masani? I would also like to know your opinion of him as a scholar, teacher, and cooperative person.

I would appreciate any information you can give me.

Yours sincerely,

Bob Cameron

Robert H. Cameron
Chairman

C/m

[ans 2/12/59]

Huntington Park, California
6051 Fishburn Avenue

January 20, 1959

Norbert Wiener
Massachusetts Institute
of Technology
Cambridge, Mass.

Dear Professor Wiener,

Someone once said that "philosophy, to be philosophy, must consider every known fact".

It has been my lot, my compulsion, for the past twenty-eight years to gather all available facts and synthesize them with all knowledge. I have done it with intellectual integrity, allowing my conclusions and intuitions to lead me towards the whole Truth concerning man, life and the universe and the scheme of evolution.

I endeavored to present my conception of the Truth, practically and concisely, in a manuscript titled ALL THE ANSWERS, which now lies with Arthur Schlesinger Jr. I placed the original of the Ms. with Vantage Press, subsidy publishers, for publication.

There are many glaring or obvious facts which have been ignored, and are still being ignored by our intellectuals and philosophers. There is much knowledge, of primary importance, which has been ignored; and it has been ridiculed; it has been repugnant to intellectuals and philosophers alike, and it is highly distasteful to financiers, commercialists, industrialists and politicians - those who control the affairs of the nation - and control the thinking of the masses and intimidate the intellectuals or theologians who might publicly deviate from the pseudo philosophies, or tenets or policies of the existing reign of finance, business and industry.

I have reference to socalled "occult" knowledge, particularly the science of Astrology and the knowledge gained by clairvoyance, the seventh sense that is involuntarily active in many people and used voluntarily by trained clairvoyants, and it is potential in every human - because every human has a Pineal Gland.

There are many people in the world today who have voluntarily developed positive clairvoyant ability, the ability to activate the pituitary and pineal glands, at will, and leave the physical body and perceive the inner structures and workings within the human and all things, and they are able to function in the inner worlds, a la Swedenborg, and consciously remember what is perceived in the inner worlds, after re-entering the physical body.

You have a Vital Body and a Desire Body, and when your physical body is in the state of sleep your vital body is restoring the physical while you are attuned to the next world by your desire body, using it as a vehicle. And your "dreams" are the distorted impressions of what you perceived while attuned to the next world.

It is as simple as that, Norbert, and it is a Fact - one that should shake the world out of its complacent ignorance, and, I hope, cause the Intelligentsia of America to face facts and form honest conclusions from the consideration of all facts - the facts as I tried to clearly present, in my poor manner, in the Ms. mentioned.

I am not a scholar, in that I do not use scholarly words in a pleasing manner and I lack accuracy, as to detail. I write practically and concisely - too concisely, perhaps. But I hold that one should think and feel and heed the intuition, rather than memorize what someone else has written, in order to rightly Know and Understand.

I know that what I wrote in the Ms. will be uncomprehendable, for the most part, because it is so foreign to present intelligence, but all through it I stressed the point to heed the intuition and the feelings of the heart. The Ms. does contain the gist, the facts and criteria, of the whole Truth concerning everything - the self-evident truth. And I hold with Emerson, "The soul is the perceiver and revealer of truth".

Therefore, I addressed the Individual, thusly: "Dear Reader: This is a story of everything concerning you as a permanent, evolutionary citizen of the universe".

Every individual needs a true philosophy, and the World needs A COMPLETE PHILOSOPHY OF TRUTH - the title of a Ms. I laboriously typed in 1940, with two fingers. Of course it was not published - it was not the Time. I think that the time has come for the fulfillment of what Christ predicted, "Ye shall know the truth, and the truth shall make you free". And He meant free in every way - mentally, spiritually and physically - freedom to leave the physical body, at Will, as many are doing today. There are individuals right now roaming the inner worlds, helping people from within and gathering knowledge and gaining experience for themselves. I know that to be a Fact.

But I am not clairvoyant, Professor Wiener, but I do have Intuition, of a high degree, and I am able to logically demonstrate, with Facts, that what I know intuitively is the truth.

And I know that when you read The Rosicrucian Cosmo-Conception, by Max Heindel, a trained clairvoyant, you will find that it commands authority - from within yourself. Your real self will sanction it.

Heindel, or Carl Louis von Grasshoff, was of German-Danish descent, and he was an engineer for the Cunard Steamship Line and an engineer for the city of Los Angeles in 1905. He voluntarily developed positive clairvoyant ability and wrote the Cosmo-Conception, which he copyrighted in 1909, and in 1911 he and his wife acquired a tract of land near Oceanside, California and founded The Rosicrucian Fellowship, one of the seven schools of the Lesser Mysteries in the world today.

In 1930 I came upon the Cosmo-Conception in the L.A. public library and subsequently started taking a free correspondence course in Astrology from the Fellowship. I have studied and checked upon the Science ever since then, and I have the peculiar ability for Astrology; it is a True Science, in spite of the fact that Webster's dictionary defines it as a "pseudo" science. I can demonstrate the truth of it.

There are three more primal factors in true philosophy - Rebirth, Determinism and Free Will - the freedom to choose and hold Ideas or Images in the mind, and couple them, or ensoul them, with Sincere Desire - just Prayer, if you please.

Abstract Ideas may be freely formed in the Imaginative Faculty and ensouled with Desire, and they become Concrete and are mechanically deposited in the Subconscious Memory, in the negative atoms of the reflecting ether of the Vital Body, there to remain as a Record of the life until it is engraven upon the Superconscious Memory just subsequent to the death of the physical body. It is the Record, engraven upon the Life Spirit part of the Ego, which determines the experiences we have to undergo in the physical world, experiences determined by the Recording Angels or Lords of Destiny whose helpers mold a vital body and place it in the womb of the future mother of the Ego, and a seed-atom of the physical body is placed in a spermatozoon of the father - before copulation, which is a predetermined act, a mechanical act, as are all physical acts in the physical world.

When a person is born all the Cosmic Rays peculiar to the moment and place are drawn in with the oxygen inspired with the first breath and the Rays form grooves in the vital body through which they flow all during life and activate the Endocrine Glands, creating hormones and counterbalancers, thus causing the peculiarities of the individual.

Now, let us consider a couple of scientific facts, relative to Determinism and the Subconscious Memory, and you may deduce how my mind works - how I correlate Facts with "occult" or intuitive knowledge.

As I stated, I can prove Astrology - that is easy. But you want proof of physical determinism - there is scientific proof, apart from the established "reign of law" of Science.

No doubt you are aware that Doctor Alexis Carrel was a great and accredited scientist: Nobel prizewinner in Medicine (1912), senior staff member of the research department of Rockefeller Institute, and author of several books, notably Man, the Unknown, an international bestseller in 1936 - in which he stated: "clairvoyants perceive not only events spatially remote, but also past and <u>future</u> events!"

At a public lecture in Baltimore in 1936 Carrel said, "We know positively that clairvoyants have the ability to accurately predict future events!"

Carrel investigated the phenomenon of clairvoyance in man over a period of thirty-five years. In his book he stated, "The facts of prediction of the future lead us to the threshold of an unknown world!"

Now, Professor, where is the "intellectual integrity" of our "intellectual component" - to use a phrase of yours and a phrase of Nathan M. Pusey, as set forth in Esquire in the article What Worries You Most About America Today??

Since it was ascertained by an accredited scientist that the future may be accurately predicted, does it not follow that all physical action is mechanical, predetermined and related? Why have our intellectuals ignored the subsequent conclusion? I would answer: because of Determinism. - because Attraction and Repulsion operates in the Desire Body relative to an Idea - Ideas are Repelled or Attracted; there is Interest or Indifference engendered in the desire body, mechanically.

So, our intellectuals have not been Interested in occult knowledge - they have been Indifferent to it - they have found it to be Repugnant.

Determinism poses a seemingly great problem in human psychology, morals and responsibility, but only because of ignorance of Rebirth and the facts relative to Free Will and the workings of the Subconscious Memory - Concrete Ideas, ensouled with wrong desire, may be eliminated from the subconscious memory structure by Confession and Sincere Penitence - just the desire for "forgiveness of sins," as a Catholic desires as he goes to a Priest to confess, or as an individual might go to a Psychiatrist to get his wrong desire-ensouled, or feeling-ensouled, Ideas eliminated from within him, the molecular structures resident in the vital body structure which are mechanically deposited there.

And that gets us to the cause and workings of the very important Subconscious Memory - that which is unfolded before the individual just subsequent to death, in the way of a Panorama of Life, that which is experienced by people who nearly drown or nearly freeze or fall from a height, like parachutists, who have often experienced the phenomenon.

There is scientific evidence of the workings of the subconscious memory. Doctor Wilder Penfield, Director of the Montreal Neurological Institute, found that when he touched a speck of brain tissue with a fine wire electrode the patient, fully conscious, had recollections of past experiences, with attendant sounds and feelings. In other words, the subconscious memory may be artificially activated - and it may also be activated by Hypnosis - to recall a detail of the past life.

Doctor Penfield reported his findings to the National Academy of Sciences in the early part of 1958, and the phenomenon was called "The Tape Recorder in your Brain," the title of an article in Coronet for Sept. 1958.

If you care to read page 91 of The Rosicrucian Cosmo-Conception you will find an explanation of how the subconscious memory comes into being, and the Purpose of it: "to serve as arbiters of the man's destiny in the post-mortem state," to quote from Heindel.

After the individual reviews the Panorama of Life in the etheric region of the physical world, to which he is attuned by the vital body, the individual becomes attuned to Purgatory by the desire body - and suffers the consequence of wrong desires and acts, mechanically engendered during life in the physical world.

Heretofore, individuals have been ignorant of the cause and mechanics of their behavior - and have suffered as a consequence, in this life and in Purgatory and in past lives. Now we have the Truth - which "shall make you free" - because of Knowledge and Understanding and Real Intellectuality, or real philosophy.

As one philosopher to another, Norbert, may I impose upon you to consider this knowledge - and the knowledge of Max Heindel?
You may find his works in the public library, at some bookstores, or it may be had from The Rosicrucian Fellowship, Oceanside, California, for $3.12, postpaid. They offer a paper-cover edition for $2.08.

I rather think that the World is waiting for the knowledge - waiting for the Sunrise, or knowledge, which will dispell the darkness of Ignorance.

The Intellectuals of Cambridge, of America, have a responsibility.

I have a project in mind, Professor Wiener, and I have made it known to Arthur Schlesinger, Jr., Henry Kissinger, Paul Tillich, Nathan Pusey and Morey Bernstein, author of The Search for Bridey Murphy. The latter is friendly towards me - while Bridey was in her hey-day, and the Hearst newspapers were blasting her and Morey, I wrote Morey, suggesting that he read Heindel's Cosmo-Conception, which he did. I recently had word from him, wishing me luck with my book, from Miami Beach, where he is vacationing. Such people, and the ones mentioned, should get together and bring this cockeyed world out of, as I wrote to Arthur, Jr., "the financial, economic and relations morass in which all peoples of the world are floundering."

There is a simple way of bringing the world out of chaos and discord: simply tell the People the Truth about everything and explain Technocracy to them - how it will work and what it will do - for the individual and the world.

It is a simple and effective Way, because the truth will be joyfully embraced and Technocracy may be easily effected because it is already shaped up in the Archetypal Region of the Real World where all things happen first - before they are manifested in this physical world.

Harkening to Science again, the scientists formed the Space-time Concept or Continuum Theory from the Theory of Relativity and the Quantum Theory, back in the early thirties. In 1934, before 2500 scientists convened in London, Sir James Jeans said: "Time and space and the physical world of substances have no reality apart from our mental concepts of them," and he added: "mind is the only reality."

The top scientists declared that "there is a real outer world," and, in 1940, Doctor Gustaf Stromberg published his book The Soul of the Universe in which he said, "there is a mysterious entity or structure, space-time, which reaches into everything." "- it has lead scientists to believe in a World Soul, or God."

I would like to call your attention to a famous prediction made by Leo Tolstoi over fifty years ago - because of a clairvoyant vision he had. He said that War, Commercialism and Hypocrisy would end, and that the nations would perceive the false value of money and that a new system would be effected which would greatly benefit the working people.
He predicted the dogmatic religions would lose their influence, that a teacher would come out of the West and that the world would embrace Pantheism. He predicted that there would be a poetic relationship between the sexes. Tolstoi was a determinist, as you may gather from his War and Peace - he believed in fatalistic determinism, because he was clairvoyant, like Plato, Dante, Schopenhauer, and a host of others, including our own Ralph Waldo Emerson, our own Max Heindel, whose works have existed in obscurity - under the guise of "occultism."

I am 53, Norbert, and my status is that of a poor, common man.
But I know the destiny of the world and mankind - and I know my own destiny.
To acheive my destiny, or goal, all I have to do is write, as I am writing to you, and talk, as I would like very much to talk with you.
May we?

Very sincerely,

Harold L. McManus

Harold L. McManus

Boston University

CHARLES RIVER CAMPUS · 308 BAY STATE ROAD · BOSTON 15, MASSACHUSETTS

KE 8-138

NEWS BUREAU

January 22, 1959

Prof. Norbert Wiener
Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, Massachusetts

Dear Prof. Wiener:

I am writing to invite you to participate in a radio program which Boston University produces on the CBS-owned station in Boston, WEEI. Entitled "The Creative Way," the series is really an investigation into the creative process.

The programs each week feature a man or woman who has made an original contribution in some field - whether art, music, literature, science, religion, philosophy, medicine, or some other area. The "Inquirer" is Dr. Kenneth D. Benne, director of our Human Relations Center. Dr. Benne usually asks the "Guest Creator" to identify what he believes to be one of his most creative endeavors. (This may be either a successful accomplishment or one which was not understood or accepted by critics and the public.) As Dr. Benne talks with the guest, he attempts to find out the processes that led to the birth of the idea, the obstacles the person encountered both within himself and in the external world, and general principles which may be helpful to others who are trying to increase their creativity.

Behind our thinking on the series is the knowledge that throughout history it was the relatively few who thought creatively who gave us our greatest works of art, music, and literature - and who paved the way in research for our greatest advances in medicine, science, and invention - advances which have benefited all peoples. Many experts in the field of creative thinking believe that the potential for creativity lies in every person

and that an understanding of what goes on in the mind of creative persons and some of the obstacles that stand in the way of ideas helps people to become more original and overcome problems.

One of the purposes of the program - and we have many - is to help the public understand the vast potential in the brains of all men and the great power for good which may be unleashed if we can find ways of unlocking some of the ideas which so often are side-tracked into unreceptive channels. We also wish to help inspire and stimulate those actively engaged in creative work or research activities, and we would like to think that responsible persons in industry and government may be helped to recognize the necessity for original thinking if some of the greatest problems of the day are to be solved.

For your further information, I am enclosing the original press release describing the series as well as some memos listing previous guests.

The programs are now aired Sunday mornings from 11:05 to 11:30 AM but are recorded in advance.

We usually record on Wednesdays, and our custom is to meet at the station at 1:45 PM and have a preliminary discussion until about 2:30 or 2:45 PM. We then record for 25 minutes.

WEEI is located at 182 Tremont Street, near the corner of Boylston and Tremont, and the studios are on the 13th floor.

I hope you will be interested and will want to be one of our "guest creators." Invariably, we have found that both our guests and we have been mutually stimulated and helped by the discussions.

I will call you later next week to learn if you will be able to join us and, if so, to set the recording date.

My good wishes to you in your work.

Cordially,

Mitzi Kornetz

Mitzi Kornetz
Producer, "The Creative Way"
Radio & TV Editor, Boston University

mk:pr
Encs.

[ans 2/11/59]

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF ENGINEERING
LOS ANGELES 24, CALIFORNIA

January 23, 1959

Dr. Norbert Weiner
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Weiner:

Mr. Michael Barry Marcus is being considered by Engineering Extension, University Extension, University of California for the position of part-time instructor for a course in basic electronics or information theory. He submitted your name as a reference in connection with his application.

We shall appreciate any comments you may wish to offer relative to his qualifications to undertake such an assignment.

Very truly yours,

J. C. Dillon

J. C. Dillon, Head
Engineering Extension

JCD:dw

[ans 2/19/59]

Uppsala, 24 Jan 59

Dear Professor Wiener,

I do not believe I have ever seen the manuscript, "Harmonic analysis and random time functions", by yourself and Professor Wintner. You did once lend me a brief note in printed form entitled "Random time" which appeared in Nature, but that must certainly not be what you are looking for.

I have been doing considerable work, still in progress, with Carleson on interpolation in the unit circle, mostly with methods of geometric function theory. The tradition of Carleman, Nevanlinna and Beurling is so strong here that I have postponed trying to learn something about mathematical physics.

I hope that you and Mrs. Wiener are in the best of health and that you will have found your MS by the time this arrives.

Sincerely,

Edwin Hewitt

MARIANNE BESSER *178 Waverly Place, New York City 14, CHelsea 3-0850*

January 24, 1959

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge 38, Massachusetts

Dear Dr. Wiener:

Enclosed is an outline of a book I am writing, under contract to McGraw-Hill, and on which I need your help. May I ask you to take a few minutes of your valuable time to read it before you continue with this letter?

While the circular describes generally what I am looking for from scientists, I come to you particularly for help with my chapter on mathematics.

As one of the country's leading mathematicians I know you are concerned with the young person's attitudes towards this field, with methods of making it attractive and of encouraging talent in mathematics. I believe that you have worked on improving the teaching of mathematics in schools. Nothing, of course, can replace a sound education, but I am sure you will agree with me that the home influence is most important in developing abilities.

I guess your children are grown up by now, but I hope you can remember back to their school years or even to the years before that.

Can you tell of any way in which you have let your children discover the challenge and excitement of solving mathematical problems, any way in which you introduced numbers to show how much they are part of the life around us. Almost anything that you have done with your children to stimulate their interest in this field or introduce new ideas in mathematics to them -- even games which you think are good for this purpose -- would, I am sure, be most interesting to parents, as long, of course, as we can hold it simple enough so that any intelligent layman can understand the suggestion. Please note that it is important that you include the ages of your children and how old they were when you did whatever you suggest.

If you want to make suggestions or comments that would help with any of my other chapters, such as the one on imagination, or on training the power of observation and analysis, or on discipline, I would be most happy.

Naturally, I would like to hear from you as soon as possible Dr. Wiener, but if you can see a clear hour five days from now, I'd rather wait for that than get a rushed answer during five minutes today.

I sincerely believe that this book can do a lot to foster a more intelligent and positive attitude towards science in the youngsters of today, but to make it a really good book I will need your help. I hope so very much that you will find the time to write.

Many thanks in advance.

Sincerely,

Marianne Besser

Marianne Besser

P.S. If you can give me one or two names and addresses of some outstanding mathematicians or other scientists whom you know to have children and who might be willing to help me, I'd be most appreciative.

About a Book on Which I Need Your Help

I have a contract with the McGraw-Hill Publishing Company to write a book tentatively titled Growing Up with Science. This book had its genesis in my article "How Scientists Have Taught Their Children Science," which appeared in THIS WEEK magazine on Father's Day, 1958. Perhaps you saw it. In the article some of the nation's top scientists told how they introduced their children to science through shared family activity. Some of the contributors were: biologist Dr. James Bonner, Antarctic explorer Dr. Paul Siple, Nobel Prize winners Dr. Glenn Seaborg and Dr. Harold Urey.

As in the article, many of the specific suggestions in the book will come from scientists. But I would also like to include suggestions from an additional important group -- parents of Westinghouse Science Talent Search winners. This letter goes to both groups, and you will be in one of them.

If you are a scientist with children, I know you will have many valuable ideas. (If you are a scientist without children, perhaps you can look back into your own childhood and recall where your parents or someone close to you might have helped to make you what you are today.)

If you are a parent of a Westinghouse Science Talent Search winner, your first reaction might be "Well, we never did anything special, it just happened that way." But when you think harder about it, you will probably remember certain attitudes and instances, activities you stimulated and encouraged, projects and even games you planned that helped to make your child the able talented person he (or she) is today.

That is the kind of thing I am looking for. In fact, let me briefly outline the essential plan of the book for you. It may interest you, and you will see the kind of specific help that I need, and which I hope you can give me.

The basic tenet of Growing Up with Science is not, of course, to make a scientist of every child, but to help parents make science a part of everyday living, and to make some suggestions on how to encourage and develop a scientific talent. Most parents are aware of the need to bring science into their home lives to complement the teacher's job in the school; but they are often bewildered as to how, their own knowledge is too limited, and the library shelves offer little help.

The plan of the book is two-fold. Part I will have chapters on qualities that should be stimulated in any child, such as curiosity, imagination, the power to observe and analyze and think independently, memory, concentration and discipline, dexterity and a good vocabulary. These qualities are certainly essential in a scientist, and helpful, incidentally, in any field.

Part II will go into the major sciences: mathematics, physics, biology and chemistry, and there will be a chapter for the child with engineering interests and talents.

(more)

In my covering letter (enclosed) I ask in detail what specific kind of suggestions I would like from you, but here are a few points on what I am generally looking for:

(1) Can you suggest ingenious ways, differing from classroom instruction, that you have used to stimulate your children's interest in science, to develop certain qualities, or to help them learn about a special phase of science? The suggestion can even be in the form of a game or it might be some special manner of teaching certain ideas. For the chapters on personality qualities (curiosity, concentration, etc.), your comments can, of course, describe attitudes and particular incidents showing how in your family, for instance, you stimulated imagination.

(2) The suggestion should not involve any large expenditures to the parent. Small cost items like cards, butterfly nets, etc. are all right.

(3) Please describe your suggestion or the childhood incident you use to illustrate your point fully, so that any parent without scientific knowledge can follow it easily. The reader will get more out of one fully explained idea than out of two half explained ones. Please also tell how you planned the activity (or whatever it was) with your children, giving as much color as possible from your own experience, letting us glimpse for a moment into your home. If you remember anything amusing -- wonderful.

(4) It would help to mention how much time is involved for the parent -- whether it is something that might be done while mother carries on her work, or at dinner, or on a Sunday afternoon drive.

(5) Please include your children's names and tell how old they were when you did these things, or for what ages your suggestion might be suitable. Incidentally, the book is for parents with children from infancy to fourteen years old.

Following an outline similar to this one, Dr. Bonner talked about catching and observing butterflies and how his children learned about living creatures by doing this, and Dr. Siple told how he demonstrated some principles of physics to his daughters by capitalizing on their musical interests. So please don't be alarmed by the detail; your own answer need probably be no longer than a page or so.

I am sure you will agree with me that any child of today to hold his own in the world of tomorrow must have an intelligent attitude towards science, must learn to see it as part of life, not something existing only in test tubes. I hope that my book, with your help, will make every parent's job a little easier in this respect.

Marianne Besser
178 Waverly Place
New York 14, New York

Here is part of Dr. Siple's letter, reproduced.

6 January 1958

Dear Miss Besser:

As you surmised, events pertaining to my recent return from the South Pole permit little time for me to do all the things I'd like to. However, your request sounds so reasonable that I'll try to answer it the best I can.

We have three daughters -- Ann Byrd - 17 years old, Jane Paulette - 15 and Mary Cathrin - 11. The art of trying to make a game out of home teaching is familiar in our family. When the older girls were in grade school we frequently spent time at the dinner table drilling on useful information that the girls might need sooner or later, such as the order of the planets, the atomic order of elements and the chemical composition of common materials. The girls excitedly informed me when they used their new knowledge later in school.

The day before your letter arrived asking for an example of how we teach bits of science at home, there was an incident that might well illustrate the point. Mary (11) asked for suggestions for a school project. She needed to take something to illustrate some form of sound and explain how the sound was caused. I got an inspiration by associating the musical interests of the girls.

"Do you remember the blind girl we saw recently on TV who played Christmas music on water glasses?"

"Yes," Mary answered. "You mean I should take a glass to school?"

We went out to the kitchen and in a few minutes had tried out the tones of several glasses. Now came the subtle persuading of the youngster into a little experimentation. The addition of water causing tone changes led me to suggest that Mary should see if she could match the tone of the glass with notes on the piano. She could mark the water level on the glass corresponding to the various notes.

This sounded like enough fun that her older sisters began to kibitz. The musicians of the family soon calibrated the glass through a range of notes.

Now came the problem of finding an explanation for the sound. I explained how her wetted finger caused friction like chattering chalk on a blackboard or the rosined bow on her violin strings. Also I tried to explain how the added water lowered the tone because it slowed down the vibrations.

"Let's see," I suggested, "if the encyclopedia can tell us how fast the glass vibrates to give off the tone."

Fortunately the student encyclopedia didn't let me down. There was a good set of illustrations and several pages on the nature of sound waves. Mary was interested enough by this time to read the article without coaxing or coercing.

The other members of the family including mother got into a discussion which soon lost me. The book showed two vibration frequencies for middle C and our tuning fork in the music room is marked with a third value. How come? The whole family is curious to find the reason.

UNIVERSITY OF VIRGINIA
DEPARTMENT OF MATHEMATICS

CHARLOTTESVILLE, VA.

January 24, 1959

Professor Norbert Wiener
c/o Dr. Dale Hooper
Veteran's Hospital
Coatesville, Pennsylvania

Dear Professor Wiener:

I have just returned from a week of consecutive meetings, and I have found your letter of January 19 mentioning that you may possibly pass through Charlottesville. You did not mention exactly when, but this is in a sense immaterial since I have no plans for being away from Charlottesville at any time in the next couple of weeks, and you and Mrs. Wiener will be most welcome at any time whatever.

I hope that we will see you soon.

Sincerely yours,

E. J. McShane

21 Reynolds Avenue

Everett, 49, Massachusetts

January 26, 1959

Dear Professeur Wiener,

Let me introduce myself, my name is Arnold Aaron, I am a junior at Everett High School with a yen for Math and I have a problem with my Science Fair project.

After reading the book," Thinkng by Machine " I noticed your name in the references. After diligently searching through the Public Library I found but one slim volume, " Cybernetics " , but it is so far over my head as to be almost funny. Oh to be sure I can understand some references such as feedback but the work involving Calculus is above my present grasp. However this is only part of my problem.

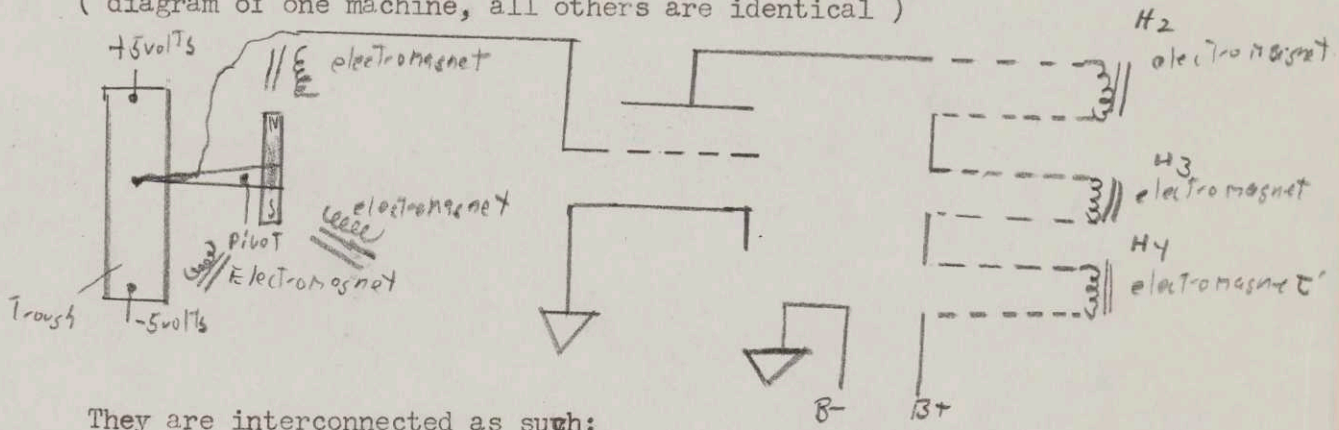
As far as I can accertain some man in California (vague reference) has invented a group of four machines called a Homeostat. It seems able to " adapt " to some degree but apart form these references some vital mechanism seems to be missing. This mechenism should either contribute to the stability of the device or else provide some means of shifting the dynamic balance of the parts. I don't know which it does or how it is connected, or even what it consists of!

I have been able to puzzle out this much:

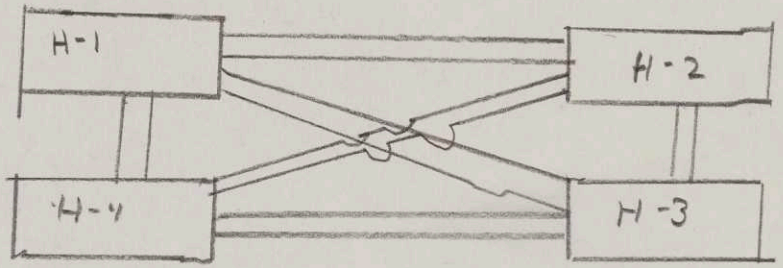
(next page)

Four identical machines are interconnected.

(diagram of one machine, all others are identical)



They are interconnected as such:



If you can help me find any additional information on this missing part or if there are any basic or trivial faults with this version that you may find with my science project would you please inform me about them

Sincerly yours,

Arnold Aaron

Arnold Aaron

[ans 2/19/59]

Jan. 26,1959

Dear Sir;

I noted your article in the Esquire Magazine alomg with your photograph.

I would appreciate very much to have inform me what brand of cigar you are smoking and how many a day.

Thank you very kindly.

6606 Edenvale Road
Baltimore-9-Md

Nathan Mindel

[ans 2/11/59]

Professor Norbert Wiener
Mathematics Department
Mass. Institute Technology
Boston, Mass.

American Friends Service Committee
INCORPORATED
Twenty South Twelfth Street
Philadelphia 7, Pennsylvania
Telephone, RITTENHOUSE 6-9372

30 January 1959

Dear Scientist friends,

You know Max Born. If you have not already seen his article "Man and the Atom", we would like to call it to your attention. In it, he raises the vitally important question for our time of scientific achievement and social responsibility.

Former Senator William Benton of Connecticut opened the Yale Conference on Human Resources to Meet the Scientific Challenge, last February, with this sentence: "During Hitler's heydey Aldous Huxley remarked that technological improvements were enabling mankind to go backward faster". Later in the same address he said,"Almost all the great thinkers of our civilization have identified the goals of science with the highest purposes of man, with the individual's freedom to develop himself in his highest powers, and the triumph of virtue and wisdom in the conduct of human affairs."

To resolve this dilemma between going "backward faster" and the "highest purposes of man" is one way of defining our task and meeting our mutual responsibility. We have not seen a clearer definition of this shared responsibility than in the following paragraph from the Statement issued by "Pugwash 1958":

"We believe it to be a responsibility of scientists in all countries to contribute to the education of the peoples by spreading among them a wide understanding of the dangers and potentialities offered by the unprecedented growth of science. We appeal to our colleagues everywhere to contribute to this effort, both through enlightenment of adult populations,and through education of the coming generations. In particular,education should stress improvement of all forms of human relations and should eliminate any glorification of war and violence."

The American Friends Service Committee (Quakers) has,since 1917, been at work in the world to relieve human suffering and to bring people together in understanding and friendliness. Many thousands of men and women of good will, of all races, creeds and countries have used our program as a channel through which to express their concern for peace.

If we address you boldly, it is because of the bigness of the challenge. We need your help as a scientist and as a man. We would value your comments on Dr. Born's article. We hope you will return the enclosed card as a convenient means of response to our invitation.

Very sincerely yours,

Norman J. Whitney

Norman J. Whitney
National Secretary for Peace Education

NJW/jc
Enc.

[ans 3/26/59]

OFFICE OF
THE EDITOR

ENCYCLOPÆDIA BRITANNICA
425 N. MICHIGAN AVENUE • CHICAGO 11, ILLINOIS

January
29
1959

Professor N. Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

For a forthcoming printing of the Encyclopaedia Britannica we are planning to include the article COMPUTING MACHINES, MATHEMATICAL THEORY OF (3,600 words).

I am writing to ask if you will be able to accept this assignment. The new material should not exceed the specified length and the Britannica rate of payment--two cents per word for new copy--will apply. The deadline for this copy is May 1, 1959.

We shall look forward to hearing from you at your earliest convenience.

Sincerely yours,

Walter Yust

Walter Yust
Editor

WY:vo-REP

[ans 2/12/59]

Jan. 31, 1959

Dr. Norbert Wiener
Professor of Mathematics
Massachusetts Institute of Technology
Cambridge, Mass.

Dear Dr. Wiener:

I am a sophomore in Engineering Physics at Washington University. I am taking a course in psychology and have become interested in cybernetics. I have looked over your book and am presently going through Ashby's "Introduction to Cybernetics" quite thoroughly. I would like to know what courses you suggest on the undergraduate level in psychology, mathematics, and engineering, to prepare for research in the field. I am also sending letters to Dr. Shannon, and Dr. Lindsley of UCLA. Thank you.

Sincerely yours,
Ted Laetsch
Liggett Hall, Washington Univ.

[ans 2/12/59]