

270

CORRESPONDENCE Dec 10-31, 1959

N. WIENER - MC 22

PHONE UNIVERSITY 4-7300



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December 10, 1959

Dr. Norbert Wiener
Massachusetts Institute
of Technology
Cambridge 39, Massachusetts

Dear Dr. Wiener:

It gives me much pleasure to inform you that our National Honor Awards Committee, at a meeting just concluded, has unanimously expressed its desire to confer upon you our Society's ASTE RESEARCH MEDAL, instituted to honor men "for significant published research leading to a better understanding of materials, facilities, principles, and operations, and their application to better manufacturing".

It is Society policy to consider such action subsequent to an elected recipient's written acceptance of the stated Award, and that he will be able to accept the Award in person. I will appreciate your kindness in writing me that you do accept the Research Medal, and that you will be able to receive it personally.

The Awards are to be presented during our 28th Annual Meeting, Detroit, Michigan, April 21-28, 1960 at the National Honor Awards Dinner. Included in attendance will be an official delegation from each of 161 Chapters in the United States, Canada, Mexico, and Australia.

I await the kindness of your early reply.

Cordially,

AMERICAN SOCIETY OF TOOL ENGINEERS

Wayne Ewing
President

WE/lq

[ms 12/21/59]

Electrical Manufacturing

Design Engineering of Electrically Energized
Machines, Appliances and Equipment

A CONOVER-MAST PUBLICATION • 205 EAST 42ND STREET, NEW YORK 17, N. Y.

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

December 10, 1959

Dear Dr. Wiener:

You have undoubtedly received your December 1959 issue of ELECTRICAL MANUFACTURING by now. Nevertheless, I am sending you the tearsheets of our review of The Tempter for your files. At the same time, I am sending a copy to your publisher.

Since my last visit with you, I have looked into some back issues of engineering magazines to find out more about your "model" for Woodbury. He is fascinating! What a marvellous story - and how shocking a picture of our civilization! We all know how often genius was not recognized in his own lifetime - that has probably gone on since the beginning of history, since genius is, by definition, ahead of his time. Or perhaps, only genius is ready to understand his time - and those who admire genius. But, I believe, before the advent of mass communications media, popular heroes, at least, had to do something to build up their own legend. Now, it seems, they must be photogenic to the extent of personifying the type the "mass communicators" have created in the public mind. And singers no longer have to be able to sing (even the squeak of a mouse can fill Carnegie Hall these days) actor no longer have to be able to act, writers need no longer be able to write, and - even scientists can be "faked" ...

I am working - in my spare time - on a novel about four men, each of whom has invented, or created, something which was not recognized. Only years later somebody else put the same ideas into practise - at least he was given credit for it - and I am trying to show what the reaction of these four people is. Each of them feels differently, one shrugs his shoulders, he has gone on to new thoughts, the rewards of society do not interest him; the second, also having gone on to new ideas - which are too advanced for the present - is genuinely happy that somebody finally put his ideas into practise; the third is bitter, and although he is given belated recognition, he has long ago become a cynical man - in his bitterness he has not been able to fulfill any of the promises of his early evidence of brilliance, and society is the poorer for having lost what he might have given. The fourth cannot be found. All this waste!

I didn't really mean to take your time with my problems - this book is that. I did want to ask, whether I would be very presumptuous to want to write about Heaviside. I cannot get him out of my mind - although I know only very vaguely just how I want to write it - a biography? a novel? I would appreciate your advice so very much.

Sincerely,
Alicia Hilton
[ans 12/16/59]

JOHN SIMON GUGGENHEIM MEMORIAL FOUNDATION

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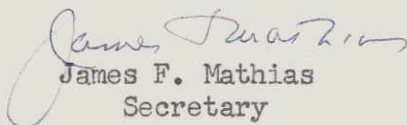
December 13, 1962

Dr. Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener:

We have just received a request from Miss Alice Mary Hilton asking that we make reference to you in the matter of her application for a Guggenheim Fellowship. This note is to say that we shall be delighted to get your opinion of her ability and promise -- confidentially, as always.

Sincerely yours,


James F. Mathias
Secretary

lb

Miss Hilton has come to my office several times with a great interest in cybernetics matters. She impresses me as an able and understanding woman who will do whatever she does very effectively. I have found her understanding and responsible in her dealings with me, and I am very curious to see what she will make of her plans. I think she is a good experimental bet.

2-276

December 14, 1959

Mr. Richard S. Burington
1834 N. Hartford Street
Arlington 1, Virginia

Dear Mr. Burington:

I am very much interested in the Spring Symposium on "Mathematical Problems in Biological Sciences". At present, I don't know whether I shall be able to make it, but I probably shall not. I suggest that you look at my book "Nonlinear Problems in Random Theory" and see if some of the ideas given there may not be useful in the study of organizing systems. I am in a great rush to get my correspondence cleared up before Christmas, and so I am putting a more detailed answer to your letter off until after the holidays.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Mr. Graham DuShane
Editor
SCIENCE
1515 Mass. Ave. N.W.
Washington 5, D. C.

Dear Mr. DuShane:

My article is at present in the hands of Dr. Commoner. I have a copy of my own in which I shall put a few revisions, but I should prefer to wait until after my talk to do this. In any case, you will have it in your hands by the 15th of January.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Prof. J. Q. Heplar
Box 83
East Carolina College
Greenville, N.C.

Dear Prof. Heplar:

Many thanks for your kind invitation to participate in a convention on Information Theory and its Application to Biology. Unfortunately, as things appear at present, I shall be abroad at the time. Why don't you get in touch with Prof. Walter A. Rosenblith at M.I.T. Meanwhile all good wishes for the success of your convention.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Mr. Salvatore Incarbone
Via Val Cristallina 3
Rome, Italy

Dear Mr. Incarbone:

In the autumn of 1960, I shall be at the University of Naples lecturing on various subjects in Cybernetics. Prof. Caianiello of the University there will know my plans. It is very hard for me to give you valid advice by mail and you seem to have time enough ahead of you, so why not get in touch with me in Naples or possibly in Rome when I come there.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Mr. Ronald A. Javitch
The Math-Physics Society
Sir George Williams College
1435 Drummond Street
Montreal 25, Que.

Dear Mr. Javitch:

Many thanks for your letter of December 1st. It will be some time in 1961 before I can even think of a visit to Montreal. I shall be in Europe this summer and autumn as well as part of the following winter. However, I should be very glad to keep in touch with you concerning possibilities in 1961.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Mr. Robert E. Machol
School of Electrical Engineering
Purdue University
Lafayette, Indiana

Dear Mr. Machol:

I am greatly afraid that my schedule for the rest of this academic year is full and that I cannot accept your kind invitation to give a talk at your symposium. You must realize that I still wish to do some work in science and that these invitations to give outside lectures have come to the point where they seriously interfere with my ability to do so. Every time that I get into a position to start something new, I find myself thrown off balance by the need to go away and subject myself to the strain of lecturing or a conference. I hope you will understand my position and excuse me.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Mr. John Nash
Athenee
6, route de Malagnou
Geneve, Suisse

Dear Nash:

It is good to hear from you. Everything is going well here, and my wife and I expect to be in Europe next summer and autumn. Perhaps our paths will intersect.

Sincerely yours,

Norbert Wiener

NW/emr

2-276

December 14, 1959

Miss Kathryn Turner
Wagner Hall
The College of Wooster
Wooster, Ohio

Dear Miss Turner:

I do not know of any textbook on Cybernetics which is written completely from the Student's standpoint. I am at present engaged in the revision of my original book in order to bring it up to date, but it, too, will be straight theory and discussion.

For people who wish to go into Cybernetics, I suggest generally that a good fundamental training in Mathematics, Physics and possibly Physiology is more important at this point than a complete concentration on Cybernetics.

Sincerely yours,

Norbert Wiener

NW/emr

Frederico Carlos Jgel

Rua Ouro Branco, 63
Tels. 8-9261 - 34-3689
C. Postal 4329 - S. Paulo

S. Paulo, 15. Dez. 1959

Herrn Prof.
Norbert Wiener
Cambridge

Sehr geehrter Herr Professor !

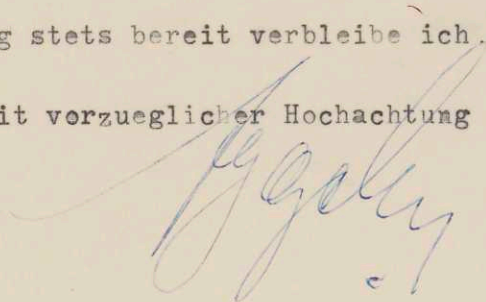
Als Schoepfer der Cybernetik duerfte Sie meine neue
Art der Verstaendigung interessieren. Ich uebersende
Ihnen anbei Prospekt und Beschreibung der

"ARMA die Weltsprache der lebendigen Zeichen".

Dieselbe wurde bereits praktisch erprobt und es be-
steht kein Zweifel fuer ihre Verwendungsmoeglichkeit.
Es ist sogar anzunehmen, dass, wenn man sich mit der-
selben eine laengere Zeit befasst, man dann die Nach-
richt nicht mehr lesen, sondern wie einen Filmstreifen
in sich aufnehmen wird.

Zu naeherer Aufklaerung stets bereit verbleibe ich.

mit vorzueglicher Hochachtung



[anz 1/11/60]

Une **REVOLUTION** dans l'histoire culturelle

de l'humanité

<⊖> **A R M A** <⊖>
A ÉTÉ INVENTÉE

La **langue universelle** des signes **vivants**,

qui ne s'appuie sur aucune des langues naturelles ou
artificielles existantes, est appelée néanmoins à devenir
LE MOYEN DE COMPRÉHENSION ENTRE LES PEUPLES.


ARMA **sans** DICTIONNAIRE, **sans** GRAMMAIRE

DESCARTES exigea l'élaboration d'une
langue artificielle qui permettrait d'écrire
à l'aide d'un dictionnaire et,
après quelques heures d'études.

Eh bien,

ARMA y réussit

sans dictionnaire.

C'EST CELA ARMA 

Voilà comment écrivent les LANGUES

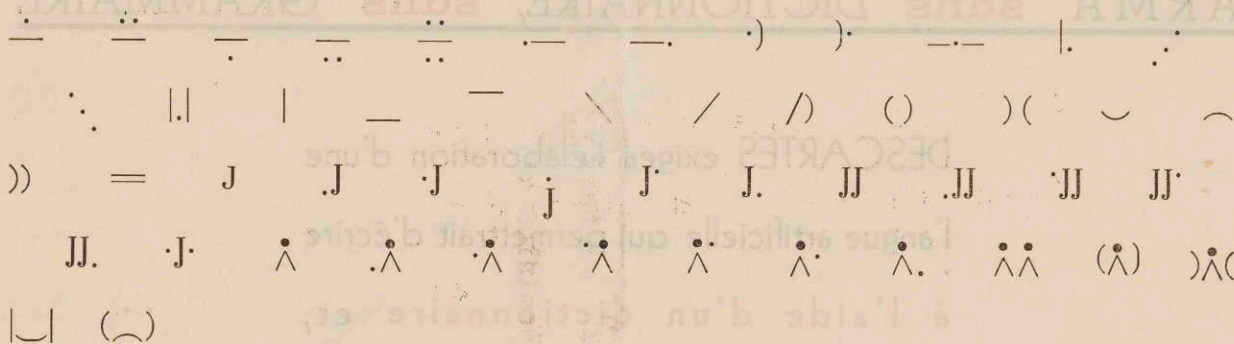
(51 MOTS POUR 50 EXPRESSIONS)

en haut, ciel, en bas, terre, univers, droite, gauche, devant, derrière, entre, près de, montée, descente, point fixe, debout, couché, pendu, penché, par, part, ensemble, séparé, ouvert, couvert, conforme, égal, jour, matinée, avant-midi, midi, après-midi, soirée, année, printemps, été, automne, hiver, pendant le jour, homme, enfant, garçon, adolescent, homme de 40 ans, vieil homme, vieillard, peuple, époux, célibataire, porte, cachette.

Et voilà comment écrit ARMA

(seulement 5 signes pour 50 expressions)

Un point, un trait, une courbe, une lettre et un symbole.



On n'a pas besoin d'apprendre les signes ci-dessus.

Il suffit de connaître les règles d'après lesquelles on les assemble.

Ce sont 20 règles naturelles et fort simples, dont la connaissance permet d'écrire et de dire toutes les expressions connues du monde.

Demandez des leçons gratuites à ARMA CENTRAL

ARMA die Weltsprache der lebendigen Zeichen.

ARMA hat mit den sog. Welthilfssprachen, wie Esperanto u.dgl., nur das Ziel gemeinsam sonst ist sie gaenzlich verschieden.

ARMA hat Beziehung zur Bilder- und Sinnschrift ist aber im Wesen etwas anderes, absolut neues :

ARMA ist eine grafische Projektion der Welt und des Weltgeschehens.

Sowie ein Haus durch einen Plan perfekt charakterisiert wird, so kann man alle Begriffe durch einfache Zeichen auf's Papier bringen.

Das folgende Beispiel zeigt wie dies zu verstehen ist :

Der Satz " ich nehme (das) Geld von ihm" wird folgendermassen "projiziert" :

l \$)3

l = ich, \$ = Geld,) = von, nehmen von, 3 = er (ihm)

Man kann den Satz auch von rueckwaerts lesen, ohne dass er den Sinn veraendert: "Er gibt Geld mir" .

"Von" und "An" sind relative Woerter, sowie "links" und "rechts" .

l) bedeutet "ich nehme"; von rueckwaerts gelesen " an mich" .

l (bedeutet "ich lasse (gebe)"; ven rueckwaerts gelesen " von mir " .

ARMA beruht auf einem neuen Gesetz der Symbolisierung, welches lautet:

Um ein Gebiet zu symbolisieren genuegt es die G r u n d begriffe dieses Gebietes und ihre Beziehungen untereinander zu symbolisieren. Alle anderen Begriffe ergeben sich dann zwangslaeufig; d.h es gibt dann fuer jeden Begriff eine fixe, minimale Kombination der Grundbegriffe, die man nicht erfinden muss, sondern nur zu suchen braucht .

Da ARMA die Grundbegriffe der Welt und ihr Beziehungen fixiert hat, kann man mit ihr alle Begriffe jeder Sprache schreiben; sie ist deshalb die umfangreichste Sprache bei geringster Anzahl von Woertern .

ARMA ist kuerzer, natuerlicher und einfacher als die Lautschrift.

Das folgende Beispiel (und es gibt noch viele solche) ist besonders charakteristisch :

Der Satz: " Die Strasse ist fuer uns ebenso gefaehrlich wie das Bombardement",

wird in ARMA wie folgt geschrieben: — — e ← = ↓ ∩ ↓

Erklaerung: _ Weg, _ _ Strasse, e ist, ← gefaehrlich fuer mich(uns),
= gleich, ↓↓ Massaker, Angriff von oben, § Feuer .

ARMA ist fuer alle Voelker gleich gut geeignet, im Gegensatz zu den
Welthilfssprachen die alle nur "Occidentale" sind.

ARMA hat keine Gramatik und kein Woerterbuch. Sie lehrt nur die Art wie
jeder sich die Woerter selbst bilden kann. Somit ergibt sich das
Eigenartige, das derjenige, der die Regeln der ARMA beherrscht Woerter
schreiben kann, die er niemals gelernt hat.

Die wenigen Regeln der ARMA sind einfach und sofort zu verstehen; man lernt
sie in etwa 3 Stunden. Danach braucht man nur noch Uebung.

ARMA lernt man nicht succesive wie eine Sprache, so dass die vollkommene
Beherrschung der Sprache ein I d e a l bleibt. ARMA lernt man wie das
Multiplizieren auf einmal. Wer die Methode des Multiplizierens versteht
kann alle denkbaren Multiplikationen ausfuehren. Wer die Regeln der ARMA
beherrscht kann alle Begriffe schreiben und lesen.

Das Wort "ARMA" stammt von "Ars Magna" einem Werk von Raimundus Lullus
aus dem 13. Jahrhundert. Er war der Erste, der Grundbegriffe auf-
stellte um damit , auf mechanischem Wege neue Begriffe zu entdecken .

- - - - -

Von einem Dr. der Philosophie wurde ich darauf aufmerksam gemacht, dass
mein Werk einer "populaeren, allgemein verwendbaren" Kybernetik entspricht .

Broschüre per Drucksache gleichzeitg.

Pro. Norbert Wiener
Mass. Institute of Technology
Boston.
Mass.

Montreal, december 15, 1959

Dear Professor:

I have the pleasure to tell you that I have found the
exact value of π .

I have made what nobody could make and I want you to be
the judge of my work.

Mathematicians were in error, Sir.

The value of π is a rational one.

Will you have the time to see my work ?

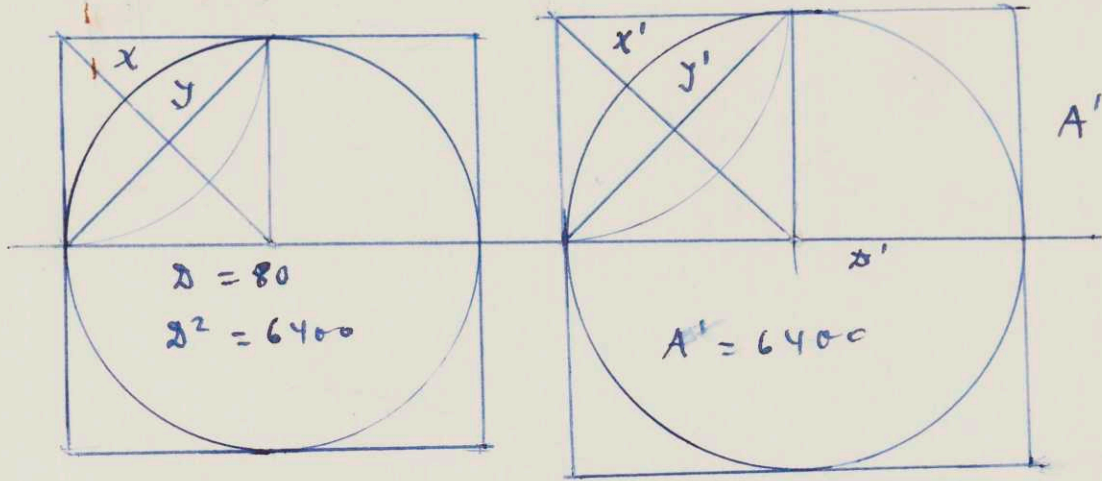
Very truly yours

J. Mora



3484 Jeanne Mance
Montreal
Quebec.

(1)



$$16y + 16x = 6400 \quad ; \quad 16y' + 8x' = 6400$$

$$16(y + x) = 6400 \quad ; \quad 8(2y' + x') = 6400$$

$$2(y + x) = 800 \quad ; \quad 2y' + x' = 800$$

$$2(y + x) = 2y' + x'$$

$$2y' + x' = 800$$

$$y' + \frac{x'}{2} = 400$$

$$\frac{2}{2} \text{ of } y' + \frac{1}{2} \text{ of } x' = 400 \text{ or } \frac{y'}{x'} = \frac{3}{2}$$

(2)

$$\frac{y'}{x'} = \frac{3}{2} \quad ; \quad y' = \frac{3x'}{2}$$

$$16y' + 8x' = 6400 \quad ; \quad y' = \frac{6400 - 8x'}{16}$$

$$\frac{6400 - 8x'}{16} = \frac{3x'}{2}$$

$$12800 - 16x' = 48x'$$

$$64x' = 12800$$

$$x' = \frac{12800}{64} = 200$$

$$y' = 200 \times \frac{3}{2} = 300$$

$16y' + 8x' = 16 \times 300 + 8 \times 200 = 4800 + 1600 = 6400$ square units =
area of the circle.

$16y' + 16x' = 4800 + 3200 = 8000$ square units = area of the
circumscribed square.

(3)

The side of the circumscribed square is $\sqrt{8000}$

The
The radius of the circle is $\frac{\sqrt{8000}}{2}$

$$A = R^2 \pi ; \quad \frac{A}{R^2} = \pi$$

$$6400 : \left(\frac{\sqrt{8000}}{2} \right)^2 = 6400 : \frac{8000}{4} = \frac{6400}{2000} = \frac{64}{20} = 3.2 = \pi$$

The area of the circle doesn't come from the formula $A = R^2 \pi$,
but π comes from the relation A/R^2 .

The value of π is the quotient of a division and consequently,
a rational number.

(Not to be reproduced without the written permission of
the author)

(From my book -- no published -- "The exact calculation of π ")

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December 15, 1959

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

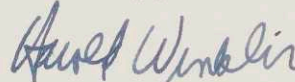
Dear Dr. Wiener:

We are now picking up a cue you gave us in your letter of September 30. In that letter you mentioned that you would be reworking the material you covered in a talk entitled "The Brain and the Machine" for presentation at a meeting of the Association for the Advancement of Science in Chicago on December 27.

Would it be possible for this talk to be tape-recorded for Pacifica? In addition to our new sister station in Los Angeles, we will soon assume control of an existing FM station in New York, WBAI. Thus, Pacifica can offer you three intelligent audiences in large metropolitan areas.

I shall look forward to hearing from you.

Sincerely,



Harold Winkler
President

HW:d
c.c. EKT
A. Rich
Encl recording
specifications

[ans 12/21/59]

Pro: Norber Wiener
Mass. Institute of Technology
Boston

Montreal, december 16, 1959

Dear Professor:

I hope you have received my first letter.

Allow me to repeat that the calculation of the exact value of π is possible.

The honor to have discovered it belongs to me. I have registered it before notary. The exact value of π is my property.

Draw a square.

Inscribe a circle.

Inscribe a square in the circle so that the vertex of the inscribed square be the middle points of the sides of the circumscribed square.

Apply Pythagoras

Suppose that $\pi = 3.2$

Very truly yours

3484 Jeanne Mance
Montreal
Canada

December 16, 1959

Professor Arthur W. Burks
180 Frieze Building
The University of Michigan
Ann Arbor, Michigan

Dear Professor Burks:

Thank you for your letter of December 9. For Professor Wiener's talk on the Communication Sciences Program, February 23 would do very well. He tells me that he would be glad to give an additional talk on a more technical basis, but he would appreciate it if the University lecture and the more informal talk would be spaced adequately so as to give him a chance to "catch his breath".

We shall inform you, as soon as the trip has been arranged, of Prof. Wiener's time of arrival.

Thank you in advance for your kind cooperation.

Sincerely yours,

Eva-Maria Ritter (Mrs.)
Secretary to Prof. Wiener

December 16, 1959

Miss Alice M. Hilton
Electrical Manufacturing
205 East 42nd Street
New York 17, N.Y.

Dear Miss Hilton:

Many thanks for your kind letter of December 10. More power to you. I think your plan is good although I see certain difficulties with it. The Heavy-side story is in the public domain and I have no exclusive claim over it. However, to really understand Heave-side's position as a mathematician which represents an important part of his work, you should make a very careful study not only of his own articles, but of the considerable number of articles about his work which appeared in the mathematical and engineering journals at the time of his death in 1925 and for some time later. The work will be hard reading, but I think it is essential if you are to do anything like a factual account of his place in scientific history and the history of invention.

Actually, I believe the best way to handle this material in a literary fashion is as a novel. A good many of the more important documents concerning Heavy-side Pupin dispute must be in the hands of the AT&T and the Bell Laboratories. They are unlikely to release them for your benefit, particularly after the appearance of my book, and in my opinion it is most certain that even if you should get some, you will not get all. A factual biographical account cannot depend on conjectures. That is one of the chief reasons why I wrote my account in a novel form.

There are many pitfalls in writing novels about scientists or biographies about scientists. Muriel Ruckeyser wrote a biography of Willard Gibbs which fell very flat, because she was not technically in the position to understand what Gibbs had really done. She filled it in with a lot of irrelevant comments on points in his life which were more suitable for the routine novelist, but not really essential, and earned some unfavorable criticism. Very likely you can do better, but don't underrate the task. Another matter is that it will be quite impossible to do justice to Heavy-side without studying the Heavy-side collection of papers and articles at the Institute of Electrical Engineers in London. Heavy-side was engaged in many disputes with his scientific colleagues. To really place him properly, it is necessary to know not only his own work but the previous state of science and engineering in which he operated.

Miss Hilton--2

I am enclosing an abstract of the paper for you. I am also confirming in writing a statement of my position with the respect to the article you wish from me. I am not able to give you a 25000 words paper, but I am able to give you a paper of some 5000 words. Of course this will involve a reconsideration of the terms which you made to me.

Please let me hear from you at your earliest convenience.

Sincerely yours,

Norbert Wiener

NW/emr

Enclosure

enclosed in letter of
Dec. 16 to Hilton

SUMMARY OF ARTICLE ON LEARNING MACHINES FOR "ELECTRICAL MANUFACTURING"

The first stage of automatization is a construction of machines which perform a set task on the basis of incoming signals from outside. In the field of game-playing machines, these are machines which play a game according to a set policy involving no contact with the antagonist player earlier than the beginning of the current game. Such machines will seem to the persons playing against them to possess a rigid personality. On the other hand, there are machines of a higher type now being experimented with by the IBM Corporation. In these machines, the memory of plays in the current game is supplemented by a memory of previous games played which allows the machine to examine the possibility of playing the individual game on the basis of its applicability to a considerable past and to recast its policy in terms of its past. In such a machine the original data put in at the construction of a machine do not determine the action of a machine completely but must be supplemented by its experience. In such a machine the policy and even the strategy are only determinable on the basis of experience and all that is put in initially is a list of the various conditions which the machine can take in giving their weights except tentatively. The operator of such a machine need not have an awareness of the detailed tactics and strategy of a machine. Therefore, he need not be able to avoid a disastrous consequence of the use of the machine until this consequence has become apparent as a realized disaster. Such machines demand greatest thoughtfulness in advance concerning the purpose for which they are programmed. They are literal-minded and the assumption that the programming to which they are subject has all the implications which we humanly attribute to such a literal-minded agency and which are attributed to all the words of magic which we find in

the fairy-tales is justified. I here speak of such stories as Goethe's "Magician's Apprentice", of the "Fisherman and the Genie" from the Arabian Nights, and of W.W. Jacobs' "The Monkey's Paw". These machines are almost certainly on their way and it is still an undecided question whether we have or can develop sufficiently penetrating intelligence to use them without disaster.

BULLETIN OF THE ATOMIC SCIENTISTS

"A Magazine of SCIENCE AND PUBLIC AFFAIRS"

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HUGH C. WOLFE
Cooper Union

SEWALL WRIGHT
University of Wisconsin

JERROLD ZACHARIAS
Massachusetts Institute
of Technology

Professional affiliations for
identification purposes only

MIDWAY 3-3056

December 17, 1959

EUGENE RABINOWITCH
Editor

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

Dear Professor Wiener:

The Chicago chapter of the Federation of American Scientists is sponsoring a panel discussion on Wednesday Evening, December 30, 1959, on "Scientific Cooperation--East and West". This is a most general topic but we hope that with several discussion leaders we might provoke active participation from the audience. Suggested speakers are Eugene Rabinowitch, Samuel Allison, Margaret Mead, Stanley Livingston, John Simpson, and Brock Chisholm. Would you be willing to participate?

The AAAS desk at the Morrison Hotel has agreed to give all registrants a notice regarding the meeting.

Looking forward to hearing from you, I am

Sincerely yours,

Ruth Adams

(Mrs.) Ruth Adams
Associate Editor

RA:hlr

will be away

Professor Norbert Wiener
Mass. Institute of Technology
Boston

Montreal, december 17, 1959

Dear Professor:

I hope you have received my first and second letter.

It is possible that mathematicians be in error, Sir.

Mathematicians are men.

Men are susceptible to be in error.

It is possible that mathematicians be in error.

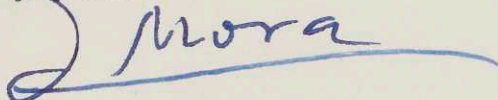
It is impossible that Archimedes and Pythagoras be both right.

If Pythagoras is right, Archimedes is wrong.

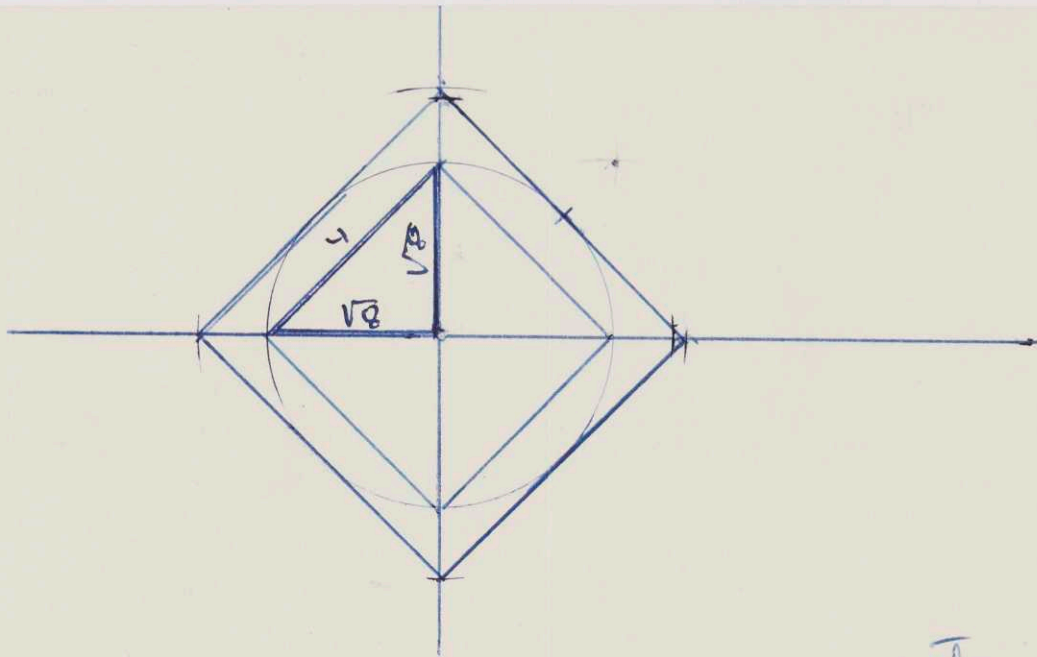
It is possible that both be wrong but it is impossible
that both be right.

It is impossible that $\pi=3.14$

Very truly yours

A handwritten signature in blue ink that reads "J Mora". The signature is written in a cursive style with a long horizontal flourish underneath the name.

3484 Jeanne Mance
Montreal



Suppose that the relation between the circumscribed square and the circle is $\frac{5}{4} = 1.25$

$$A = \frac{D^2}{1.25} \quad ; \quad D^2 = 1.25A$$

Suppose that the relation between the area of the circle and the area of the inscribed square is $\frac{8}{5} = 1.6$

$$A = 1.6D_1^2 \quad ; \quad D_1^2 = \frac{A}{1.6}$$

The relation between the areas of the circumscribed and inscribed square is:

$$\frac{S^2}{S_1^2} = \frac{1.25A}{\frac{A}{1.6}}$$

$$= 1.25A : \frac{A}{1.6}$$

$$= \frac{1.25 \times 1.6 \times A}{A} = 1.25 \times 1.6 = 2$$

The result obtained shows that our suppositions are true.

If the side of the inscribed square is equal to 4 units,
the square has 16 square units.

The circumscribed square has 32 square units.

The area of the circle is:

$$A = 16 \times 1.6 = 25.6 \text{ square units.}$$

$$\frac{A}{\pi} = R^2$$

Suppose that $\pi = 3.2$

$$\frac{25.6}{3.2} = 8 = R^2 \quad ; \quad R = \sqrt{8}$$

The radius is a leg of the right-angled triangle.

The hypotenuse equals 4

Suppose that the Pythagorean Theorem is true.

$$\begin{aligned} (\sqrt{8})^2 + (\sqrt{8})^2 &= 4^2 \\ 8 + 8 &= 16 \end{aligned}$$

If π was not 3.2, Pythagoras would be wrong because the
relation between the area of the two squares and the circle
would be different.

BRANDEIS UNIVERSITY
WALTHAM 54, MASSACHUSETTS

Phoned up
Dec 21

December 17, 1959

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

Dear Professor Wiener:

Professor Wigner will be at Brandeis on January 5
to deliver a lecture.

A dinner in his honor will be given that evening
at 7:00 p.m. (cocktails at 6:30 p.m.) in the Faculty Center
to which you are cordially invited.

Sincerely,



S. Schweber, Chairman
Department of Physics

SS/h

R. S. V. P. Tw-4-6000, Extension 349

60

December 18, 1959

Dr. Norbert Wiener
Institute Professor
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Dr. Wiener :

Your novel "The Tempter" activates deep feelings seldom touched by society in general. Please believe in my gratitude.

You may be interested to learn that a real life situation strikingly close to the one you present is developing at this time in California. It concerns patent rights in the new field of prestressing.

I have made several valued inventions, entered into agreements with several steel corporations and a Swiss firm and been manoeuvred into reaping no benefit from my ideas yet. I have found it impossible to obtain competent legal representation since 1957 and am fighting back by means of an economic device I have imagined to force a settlement.

Group dynamics are still preventing me from obtaining work or employment anywhere. All this is so shabby and so unnecessary. I was so profoundly wound that I had to request hospitalization at the Langley Porter Neuropsychiatric Institute nearly one year ago. I am well now, but am with no friends, no money, no backing and no apparent legal progress.

Last year, the office of the Attorney General of California helped me to rescind discriminatory specifications that the California Highway Division had evolved and that eliminated my competitive threats.

The Antitrust Division of the Department of Justice has filed suit in Federal District Court in San Francisco on November 23, 1959 against nationwide and Western steel mills, distributors and fabricators conspiring to monopolize the reinforcing business.

It was reported in the national press. The defendants have until January 27, 1960 to file a response. I am preventing the same companies from monopolizing profitably the prestressing business (site construction) which they also consider as their exclusive domaine and which is making steady inroads into their reinforcing volume.

The Sherman Act, invoked in the Federal suit, is not retroactive. I am too small to go ahead without solid support, but have started patent proceedings on several ideas.

The local M.I.T. alumni are only able to offer sympathy. I feel only you can help me in the long run.

Would you care to advise? Feel free to request any particulars of interest to you. Would publicity help? I know how busy you are and frankly find it distasteful to have to call your attention away from your more momentous problems.

Enclosed are my record and a short essay. I am undecided whether any novelty dealt with therein is of substance or merely of form.

When at M.I.T., lack of time and of funds prevented me from completing my graduate thesis on prestressing. As a result, I was deprived of the Master's degree which I cherished and had come from France to earn.

I am of Armenian stock. My father, Haik Kourkene, was a constructor, inventor and civil engineer, a graduate from the Ecole Nationale des Ponts et Chaussees. He died during World War II. Forebears were engineers and educators in Turkey and Russia.

Wishing you a happy holiday season, I remain,

Respectfully yours,

J. Paul Kourkene

J. Paul Kourkene
 Prestressing Consultant
 Langley Porter Neuropsychiatric Institute
 First and Parnassus Avenues
 San Francisco, California

[ans 1/18/60]

PHILOSOPHICAL ASPECTS OF GENERAL PRESTRESSING

Our Universe can be conceived as consisting exclusively of strains and events intimately associated in a space-time continuum. Semantically, we think in general of events as generating a multifold infinity of strains. Although separate, strains or events are of the same nature.

A fracture or fault is a distortion, a localized inconsistency in a field or chain of such strains or events. Stresses are simply entities defined as convenient tools to analyze and measure circumstances surrounding the compatibility of strains and therefore, the probabilities existing against their disruption for boundary conditions.

The abstract concept of generalized prestressing can be directed to the systematic adjustment of the pattern of strains in any given medium. In critical applications within that medium, their compatibility can be modified by superposition of appropriate states. This principle is invariable, independent of matter or its combination into structures.

Observable events under prestressing conditions are unobtrusive. In material media, these are the strains of elasto-plastic deformations of either sign, including warping. Completing the parity, it is likely that means will be devised to stretch our use of time at will. Our understanding of the scope of prestressing is so recent and tenuous that such an advance might elude our search in the predictable future.

The starting point is the successful programming of unconscious motivations, a preconditioning operation easily achievable but of practical consequences still beyond our reckoning in evolutionary changes anticipated. Anything can be ordered a little better in our environment if the proper tool is available. By definition, such a radical instrument is called general prestressing.

Prestressing is the law of order into a relative chaos. It constitutes by itself a complete and difficult science. Its theory appears as an adjunct to that of relativity. Like the latter, it lends itself to precise mathematical analysis. A clear grasp of the fundamental prestressing principle opens the way to countless basic and applied discoveries with immediate potential for commercial exploitation.

PERSONAL RECORD

J. PAUL KOURKENE

P. O. Box 489, Berkeley 1, California

Born on April 14, 1927 at Saint-Brevin-l'Ocean, Brittany, France

COLLEGE EDUCATION

National School of Bridges and Roads, Paris, France

Massachusetts Institute of Technology, Cambridge, Massachusetts

M.I.T. Graduate School

Bachelor of Science in Civil Engineering Degree from M.I.T. (1948)

COLLEGE EXTENSION

Economics, Finance, Business Administration, Resource Development,
Patent Law at Universities of Denver, of Colorado, of California.

IN-SERVICE TRAINING : United States Bureau of Reclamation

Structural research on prestressed concrete, utilizing French made
expanding cement, through arrangement with the United States
Department of State. First study on prestressing by the U.S.B.R.,
Denver Federal Center, Denver, Colorado.

Certificate of Merit (1951)

SPECIAL SKILLS

Capacity for independent work
Reduction of ideas to practice

OBJECTIVE

Introduce and adapt profitable ideas through subcontracting,
manufacturing or servicing in wider and wider markets.

MISCELLANEOUS

Investigation of promising fields for prestressing concepts
Filming of motion pictures

MEMBERSHIPS

M.I.T. Club of Northern California

Structural Engineers Association of Northern California

Research Committee, Prestressed Concrete Subcommittee

Junior Activities Committee

PROFESSIONAL RECORD

WATER RESOURCES DEVELOPMENT CORPORATION , Denver, Colorado (1951)
Draftsman and statistician.

TECHNIC ENGINEERING COMPANY , Dallas, Texas (1952 and 1953)
Estimator and consultant.

PRELOAD COMPANY , New York (1952)
Prestressed concrete designer under Marcel Fornerod.

TEXAS HIGHWAY DEPARTMENT , Dallas, Texas (1953)
Conception, design and detail of the Pine Street Overpass
on the Dallas Urban Expressway.

First prestressed concrete bridge in the Southwestern United States,
first major integral roadway slab-flange type prestressed concrete
bridge in the United States, first pure Tee shaped prefabricated
bridge in the World.

SELF - EMPLOYMENT . (1953-1959)

Prestress Service to non-specialized firms active in the field
of prestressing, such as general contractors, concrete fabricators,
steel distributors, consulting engineers, public awarding agencies.

Services cover designing, detailing, testing, product planning,
market analysis, cost estimates and control, production and
rationalization, coordination between contractor and administration,
purchasing, use of posttensioning equipment, direction of operations,
general technical assistance.

In California, services involved the following bridges, among others :

- . San Francisco-Oakland Bay Bridge (remodeling of S. F. supports)
- . Eureka Slough Bridge near Eureka (main span)
- . Route 107/5 Separation near Dublin
- . Junipero Street Overcrossing in Santa Barbara
- . Santa Clara River Bridge at Saticoy (site precast, longest in the West)
- . 13th Street Overcrossing at Paso Robles (continuous, first of its type)

SAN FRANCISCO COLLEGE FOR WOMEN , San Francisco (1958-1959)
Teaching of Mathematics.

Professor Norbert Wiener
Mass. Institute of Technology
Boston

Montreal, december 18, 1959

Dear Professor:

I hope you have received my first three letters.

The human mind begets monsters, and from the monsters, the reason comes.

The irrational value of π comes from the irrational method employed to find it.

The value of $\pi = 3.14$ is the son of a monster.

Archimedes was an irrational monster; the monster of the error, the father of the error.

Where the circle goes, Archimedes goes, $\pi = 3.14$ goes, the monster goes. All the monsters go together.

Many men are immortal for their lies.

We must bury them, Sir.

I need your help.

Very truly yours

Juan Shora

Suppose that you have a straight line 5 units long and that with this straight line you make a circle; or better, suppose that you have a circumference 5 units long.

$$C = 5$$

The diameter is unknown.

The relation C/D is unknown

$$D = \frac{C}{\pi} = \frac{5}{\pi} \quad ; \quad 5 = D\pi$$

Suppose you have another circumference having 5 units of diameter.

$$C' = D'\pi = 5\pi \quad ; \quad 5 = \frac{C'}{\pi}$$

$$D\pi = \frac{C'}{\pi}$$

$$D\pi^2 = C'$$

Suppose that $\pi = 3.2$.

Check.

If the supposition was the reality, the reality would be the supposition.

Suppose that $\pi = 3.14$. Check

If the supposition was not the reality, the reality wouldn't be the supposition.

Make a conclusion.

Suggestions.

It is true.

It is not true.

It is true that.....

It is not true that.....

If this was that, that would be that.

If this was not that, that wouldn't be that.

If Pythagoras was Archimedes ...

If Archimedes was Pythagoras.....

If Pythagoras was wrong.....

If Archimedes was wrong.....

A thing implies the other.

Things become.

The truth exists.

The impossibility exists.

The possibility becomes certitude.

The impossibility becomes possibility.

The possibility becomes impossibility.

The rational becomes irrational.

The irrational becomes rational.

Things are.

$\pi \neq 3.1$ because it is equal to 3.14

$\pi \neq 3.14$ because it is equal to 3.141

$\pi \neq 3.141$ because it is equal to 3.1415

The absurdity exists.

140 Hollister Avenue
Santa Monica, California

December 18, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener,

Julie and I avidly read the reviews of The Tempter and were delighted that it was received so well. I don't think that the reviewers, especially in the Saturday Review, fully understood you but I'm sure that the engineers and scientists will.

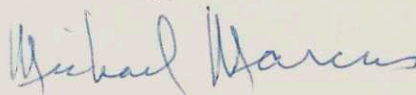
Our course has had a very significant effect upon the Southern California scientific community. A group of us get together at the I.R.E. Information Theory Group meetings to discuss our progress. Also, I receive many phone calls to discuss points of the text.

I enjoyed our association thoroughly and the work we did in mechanics interested me. I would like to join you at M.I.T. in September and write my doctorate thesis for you in this area, if you are willing. Since you left I have been studying mechanics and methods of mathematical physics, besides continuing formal mathematical work. Also I am teaching Ordinary Differential Equations at Los Angeles City College. (Incidentally, they said your talk highlighted the summer.)

I am writing Dr. Martin to ask him if I can have a teaching assistantship. I would like to teach probability (Feller's) but of course I will teach whatever he wishes. I will be in a difficult financial position and would welcome any suggestions that you might have on how I could help myself.

I hope that you remember our summer's work pleasantly and will accept me as a student and recommend me to Dr. Martin for a teaching position. I am very anxious to work with you. However, whatever your plans are for next year my wife and I send our most cordial holiday greetings and fondest regards to you and Mrs. Wiener.

Yours truly,



Michael B. Marcus



WILLIAMS COLLEGE
WILLIAMSTOWN, MASSACHUSETTS

Dec.18, 1959

Dear Professor Wiener,

I am writing for the Williams Lecture Committee to inquire whether you would be willing to lecture in Williamstown sometime in February or March of this coming year. Those faculty members who have heard you speak are quite enthusiastic about the possibility of your lecturing here and all agreed that we should extend you an invitation.

Such a lecture would be heard by a general audience and could cover any topic of your choice. The Lecture Committee would pay you \$300.00 for your appearance. It has been found through experience that an evening early in the week is best for a lecture here, if it fits your class schedule at M.I.T..

We would be more than willing to work out any transportation arrangements you might desire.

My address at Williams is: Kappa Alpha, Williamstown, Mass. I shall be home for the holidays, but will be back in Williamstown by January 2. I shall look forward to hearing from you at that time.

Sincerely,

John P. Richardson

John P. Richardson
Undergraduate Chairman
Williams Lecture Committee

[ans 1/8/60]

December 18, 1959

Prof. A. Masturzo
President
Societa Internazionale di Medicina
Cibernetica
Via Roma, 348
Napoli, Italia

Dear Prof. Masturzo:

Thank you for your letter of December 5. I am highly honoured by my election as member of the Council and U.S. delegate of the International Society of Cybernetic Medicin, and would be glad if I could to talk at the 1960 Symposium. However, this depends on a variety of things.

I have written to Prof. Cainiello at the Institute of Physics to make definite my plans for visiting Naples this autumn (1960). It would be well for you to get in touch with Prof. Caineillo, as he will know all my plans, but until I hear from him, they cannot be complete.

Sincerely yours,

Norbert Wiener

NW/emr

December 18, 1959

Mr. Allen Skaggs
University News Bureau
Building H
University of Florida
Gainesville, Fla.

Dear Mr. Skaggs:

Mr. Zimmerman, Chairman of the Sub-Committee on Public Lectures at your University requested in his letter of Dec. 7, that we send some material useful in publicizing Prof. Wiener's lecture directly to you. I am hereby enclosing one photograph, three news clippings and a biographical sketch. I hope that it will be helpful to you in your preparations.

Sincerely yours,

Eva-Maria Ritter (Mrs.)
Secretary to Prof. Wiener

December 18, 1959

Mr. L.L. Zimmerman,
College of Arts and Sciences,
Department of Speech,
University of Florida
Gainesville, Florida

Dear Mr. Zimmerman:

Thank you for your letter of December 7 in which you asked me to help you arrange some of the final details concerning my talk at your University.

Unfortunately, my plans regarding times of arrival ect. have not been completely worked out as yet. Mrs. Wiener and I are leaving for St. Petersburg on the 21st where we shall be staying at the El Rancho Motor Lodge, 1701 Fourth Street S.; from there it will be easier to find out which will be the best way to go to Gainesville. We shall arrive on the fifth or perhaps one day before the lecture. Any help or suggestions you might be able to offer would be greatly appreciated.

I am forwarding the material which you requested to Mr. Skaggs.

Sincerely yours,

Norbert Wiener

NW/emr

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH LABORATORY OF ELECTRONICS
CAMBRIDGE 39, MASS.

December 19, 1959

Memo to Mrs. Ritter

Mathematics Department

M.I.T.

Professor Wiener's Visit To Mexico

Professor Norbert Wiener has always been a sincere and loyal friend of Mexico. In the prefaces of several of his books he has made mention of his happy associations with several prominent Mexicans and of his stay at the Institute de Cardiologia in Mexico City. When he speaks about Mexico he takes pride in presenting the best facets of the intellectual, artistic and moral life of our country. For all these reasons - and of course for his eminence in the mathematical field,- the National Polytechnic Institute of Mexico had extended a cordial invitation to visit Mexico as a token of the great esteem and admiration for Dr. Wiener. Dr. Wiener's acceptance has been considered an honor to the Instituto Politecnico Nacional. His lectures on self organized systems were greatly appreciated.

M. V. Cerrillo
R.K.T.

M. V. Cerrillo

INSTITUT HENRI POINCARÉ
11 rue Pierre Curie
PARIS 5^e

20.12.59

Mon cher collègue

J'ai eu récemment entre les mains votre livre, "I am a mathematician". J'en ai commencé la lecture, qui m'intéresse vivement

Je dois d'abord vous remercier pour la sympathie que vous y exprimez pour ma personne et pour mon œuvre. (Comme on dit en mathématique, on a peu près: la réciproque est vraie).

Je suis même d'accord avec vous quand vous dites que j'en ai pas été "the absolute leader of the mathematicians of his generation". Je n'ai jamais maîtrisé l'ensemble des mathématiques comme l'ont fait Poincaré, Hadamard et d'autres et je suis satisfait de penser que mon œuvre "has proved to be very important but less central than we expected".

Il y a un point qui mérite explication. Vous dites, et vous avez raison, "I do not think that Fréchet appreciated the importance of differential space ---". C'est qu'en effet, à cette époque, j'étais complètement ignorant du Calcul des Probabilités et je ne pouvais ~~rien~~, non seulement apprécier, mais même comprendre, un texte qui en faisait usage. Et c'est pourquoi, comme vous le dites, "he got me in touch with Paul Lévy" dont je savais qu'il s'occupait de probabilités depuis plusieurs années. C'est, peu à peu, à partir de 1920 que des circonstances locales m'ont amené à m'intéresser à ce calcul et à sa explication, jusqu'à y consacrer, non pas la totalité, mais

une grande partie de mes recherches.

Après ces remarques d'ordre personnel, j'en viens à un point de vue strictement scientifique au sujet d'une question qui pourrait vous intéresser.

D'une part, vous avez avec Banach (et aussi, me l'a appris Karl Menger, avec Hans Hahn, mort il y a quelques années) introduit la notion d'espace que j'appelle "vectorel distant", que d'autres appellent "linéaire normé", etc...

D'autre part, en plusieurs pages de votre livre, vous insistez sur l'importance de l'espace dont chaque élément est une courbe (disons par exemple, une courbe au sens de Jordan : x, y, z fonctions continues etc.).

La notion de l'espace que j'appelle aussi espace B.W.H. (Banach, Wiener, Hahn) a permis de formuler de manière concise des théorèmes concernant de nombreux espaces fonctionnels. Son utilité ~~de~~ serait grandement accrue si on pouvait prouver que l'espace des courbes est un espace B.W.H. ? On peut le faire en admettant des correspondances purement artificielles entre courbes et points de l'espace euclidien. Mais peut-on le faire d'une manière raisonnable ? C'est ce que j'ai donné dans ma

Thèse une définition, que j'étais satisfaisante, de la distanse de 2 courbes. D'autre part, il serait naturel d'appeler produit par scalaire, $a.C$, d'une courbe C par un nombre a , l'homothète de C au rapport a l'origine dans le rapport a .

Mais que peut-on entendre par somme de 2 courbes ?

J'ai cherché à résoudre ce problème sans y parvenir. Les deux intérêts dans l'espace B.W.H. et dans l'espace des courbes devraient vous tenter de résoudre ce problème ou au moins d'engager quelques jeunes à s'y essayer.

(J'ai écrit trois articles qui, sans résoudre le problème, pourraient peut-être aider à le résoudre et que je vous envoie sans plus tarder)

Votre bien cordialement
H. Fréchet

2, Rue Emile Faguet,

14^e, Paris [Lund 3/25/60]

1834 N. Hartford St.
Arlington, Virginia
21 December 1959

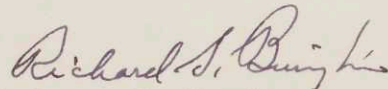
Professor Norbert Wiener
Department of Mathematics
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

Thank you for your note of 14 December.

I have a copy of your book on "Nonlinear Problems" and it was partly because of the ideas you expressed there that I sought your advice on the proposed symposium on "Mathematical Problems in Biological Sciences."

Sincerely yours,



Richard S. Burington
Chairman, Committee on
Applied Mathematics
American Mathematical Society

1466 E. 20th St.
Columbus, Ohio
December 21, 1959

Dear Dr. Wiener,

I read your book, "The Tempter and I hope you don't mind this note about how I enjoyed it.

The two points of the book that invaded my consciousness and started me thinking and admiring your skill as an author were: 1) Gregorys' moral conflict and 2) the skillful manipulation of the personality of Woodbury to show that he was a genius.

While the courage and honesty of a man in conflict with the hard business world is the main point of the story, I think you got it across with particular accurateness. It is something everyone must face and I had no thought much about it until now. And accordingly, it has stimulated me to read several other books dealing with that particular phase of the business world. I knew it was every man for himself, but it brought the problem into a new awareness and new focusing for me. I guess it is true that if one looks for something it can be found. Also one is amazed that they can find it after passing over it. Now I can see that it exists in many shapes and forms that I never thought possible. I say this as a novice of three months in the business world.

For a pastime (and mental exercise), I have taken the occasion to speculate and try and figure out the personalities of the main character how they would react to several different situations if the characters were real, and if they came in contact with those particular situations. I have based the speculation upon your characterizations of them as they appeared in your book. Woodbury in particular impressed me. I have unconsciously compared him with Gauguin (or at least with the character Charles Strickland who represented Gauguin in the book a "Moon and Sixpence" by Maugham.)

As their lives were so different it would be impossible to compare that, Woodbury and Gauguin have to be compared as possessing the basic fundamental traits that all genius' usually have. That seems to me to be the burning, feverish desire to create- if not for other people, for themselves, to use that energy to create, create, and express themselves.

I understand cybernetics to be the translation of the human nervous system into complex equations. Does knowing this enable you to portray such characters so realistically?

Im eighteen and I am working in a bookstore. I am doing this so I can continue in College. I would say I have read books on cybernetics, but right now college trigonometry is my speed. Actually mathematics is interesting but I'm afraid my enthusiasm exceeds my ability. I enjoy doing logic problems and try the harder ones.

I hope to read your other two books eventually.

Sincerely


Miss Janet Gabele

[ans 1/15/60]

EASTERN STAINLESS STEEL CORPORATION

P. O. Box 1975
BALTIMORE 3, MARYLAND

TELEPHONE
ATWATER 8-2000



TELETYPE
ESSEX 283 OR 376

December 21, 1959

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Dr. Wiener:

You no doubt have been asked by the Industrial Liaison Office of the M.I.T. Alumni Association about the possibility of visiting Baltimore for the February, 1960 meeting of the M.I.T. Club. As a former student of yours during the days of "Woods and Bailey", I would deem it an honor indeed to have you break bread with us at one of our dinner meetings.

As to the subject of your talk, I would not presume to make any suggestions, but prefer that you feel free to discuss any matter you wish, which I am sure will be well received.

My son, also a student of yours 25 years later, assures me that you have not lost your touch and that your crisp quips will have us rolling in the aisles.

Our heartfelt invitation is extended to you for any time you wish to name.

Kindest personal regards.

Very truly yours,

H. J. Verner, '23
President,
M.I.T. Club of Baltimore

HJV/dm

Stainless Steel Sheets and Plates Exclusively

[enc 1/7/60]

December 21, 1959

Mrs. Ruth Adams
Associate Editor
Bulletin of the Atomic Scientists
5734 University Avenue
Chicago 37, Illinois

Dear Madam:

Prof. Wiener wishes me to thank you for your letter of Dec. 17, in which you invited him to take part in a panel discussion on December 30. Unfortunately, he will be away at the time and regrets to inform you that he will not be able to attend.

Sincerely yours,

Eva-Maria Ritter (Mrs.)
Secretary to Prof. Wiener

December 21, 1959

Mr. Richard S. Allen
Chairman
Footprints Conference
Citizenship Dept., 105 Maxwell Hall
Syracuse University
Syracuse 10, New York

Dear Mr. Allen:

Thank you very much for your letter of December 7 and for your invitation to speak at your Footprints Conference in March.

My schedule of lectures for next term is complete and contains as many as I feel myself able to give properly. Therefore, may I beg off the invitation which you have given me? Meanwhile I wish you all success in your undertaking.

Sincerely yours,

Norbert Wiener

NW/emr

December 21, 1959

Mr. Edmund Dews
Pergamon Press, Inc.
122 East 55th Street
New York 22, N.Y.

Dear Mr. Dews:

Prof. Wiener wishes to thank you for your kind offer to select three or four titles from your catalog and has asked me to list them as follows:

- | | |
|------------------------------------------------------------|---------|
| 1. Biochemistry of Steroids, Mosettig | \$12.00 |
| 2. Biochemistry of Development, J. Brachet | 10.00 |
| 3. An Outline of Development Physiology, Raven | 5.00 |
| 4. An Introduction to the Theory of Numbers,
Vinogradov | 3.00 |

Sincerely yours,

Eva-Maria Ritter (Mrs.)
Secretary to Prof. Wiener

December 21, 1959

Mr. Wayne Ewing
President
American Society of Tool Engineers
10700 Puritan Avenue
Detroit 38, Michigan

Dear Mr. Ewing:

I feel highly honored by your desire to confer upon me the ASTE RESEARCH MEDAL. However, I am afraid that I shall be unable to accept it as my previous engagements prevent me from being present at your meeting in Detroit. I hope you will understand that the pressure of my previous engagements is considerable and that the degree of fatigue which I should incur in adding to it is to me a serious hazard.

Sincerely yours,

Norbert Wiener

NW/emr

December 21, 1959

Mr. D. Stanley-Jones
Buckshead, Townshend
Hayle, Cornwall
England

Dear Mr. Stanley-Jones:

Many thanks for your letter of the 25th of November. I am on my way down to Florida where I am taking a two-weeks vacation in the middle of the Winter, and during my stay I shall try to write the preface to your book. A good book deserves a good preface, and I shall do my best. I shall send you a copy as soon as I have got it done.

Sincerely yours,

Norbert Wiener

NW/emr

December 21, 1959

Mr. Harold Winkler
President
Pacifica Foundation
2207 Shattuck Avenue
Berkeley 4, Calif.

Dear Mr. Winkler:

I find that the effort of giving a good tape interferes seriously with my mode of lecturing. I shall see that you get a typewritten copy of the lecture in the immediate future.

Sincerely yours,

Norbert Wiener

NW/emr

Application for Research Professorship
in the Adolph C. and Mary Sprague Miller
Institute for Basic Research in Science,
1961 - 62.

December 22, 1959

E. W. Barankin

DESCRIPTION OF RESEARCH PROGRAM

It is my desire to pursue intensively the studies and deliberations necessary to carrying further my work on the nature of probability. An exposition of the ideas comprising this work is given in the article "Toward an Objectivistic Theory of Probability" (Proceedings of the Third Berkeley Symposium on Mathematical Statistics and Probability, Volume V, University of California Press, 1956). Putting aside the breadth of implications of the theory I have outlined in this article, there is a focal point at which fundamental investigation must be directed. This is, namely, the matter of the four forms of dynamical law that I set forth there on p. 35 et seq, and the assertion of their equivalence, on p. 37. At the time of publication of the article I believed that I had proved this equivalence, that at least this much of the precision base of the theory was accomplished; but subsequently I discerned that my proof was in error. Interestingly enough, this may be a boon. That is, the intuitive appeal of these four forms of law, and the intuitive necessity of their equivalence (or something close to it) may provide the strongest kind of tool for beating the basic concepts into shape.

The basic concepts of which I speak are those of eventuality and probability. These, in my conception, are primitive realities and the task is to properly characterize them in an axiomatic system. Forming a crucial aspect of the theory is the notion that on any particular occasion there is no exhaustive collection of eventualities one of which will actualize. This is strongly reminiscent of the denial of the principle of the excluded middle. The latter principle is a well

recognized point of contention in the problem of the foundations of set theory; and taking note of the fact that, in the present mathematical formalism of probability theory, eventualities are represented by sets, we are led to face the possibility that the achievement of correct understanding of eventualities may be coextensive with the satisfactory resolution of the foundational problem of set theory.

Simultaneously with a revision in our understanding of eventualities (or sets), it is to be expected that we may have to alter (generalize) our idea of a probability distribution as a measure. One of the sharpest indications in this direction is the fact that conditional probability distributions do not always exist as measures. And at the applicational end there is the circumstance that the formalism of quantum mechanics does not jibe satisfactorily with the present mathematical formalism of probability theory. Such a circumstance must find a resolution, in the view of the theory we have proposed, which calls for the universal accounting of behavior as the evolution of stochastic processes

The work of suitably revising our present conceptions of eventualities and probability distributions, in the spirit of the indications in the preceding two paragraphs, is what I mean by beating the basic concepts into shape. It is to this program that I wish to devote my time.

TECHNION - Israel Institute of Technology
Division of Hydraulic Engineering.

Haifa, December 22, 1959.

Professor Norbert Wiener,
Dept. of Mathematics,
Massachusetts Institute of Technology,
Cambridge, Mass.,
U.S.A.

Dear Professor Wiener,

I wish you a happy New Year and remember with
pleasure our meeting during my sabbatical leave.

*I am curious to see your new theory
on turbulence.*

Sincerely yours

S. Irmay

S. Irmay, Professor
Division of Hydraulic
Engineering.

ישראל
29
איגרת אוויר
AEROGRAMME
ISRAEL 13



חיפה
23.12.59
HAIFA



Prof. Norbert Wiener,
Dept. of Mathematics,
Massachusetts Institute of
Technology,
Cambridge, Mass.,
U. S. A.

הטכניון
TECHNION
חיפה
23.12.59

קפל שלישי

אם יושם משהו בפנים, תישלח האיגרת בדואר רגיל

EXPEDITEUR - השולח

Prof. S. Irmay
Division of Hydraulic Engineering
Technion - Israel Institute of Technology
Haifa - Israel.

קפל שני

לומאט טאט





SOCIETA' INTERNAZIONALE DI MEDICINA CIBERNETICA
S. I. M. C.

IL PRESIDENTE

NAPOLI 22/12/59.....
VIA ROMA, 348
TEL. 32.26.23 - 31.31.84 - 31.31.25

Dear Professor,

on september 20th we would have the interna-
tional Symposium of Cybernetic Medicine.

We ask you to be so kind to let us know whether
this date is convenient for you for your conference.

Thanking you very much we send our best wishes
for the New Year.

Sincerely yours

Prof. A. MASTURZO

[ans 1/11/60]

THE INSTITUTE FOR CANCER RESEARCH

7701 Burholme Avenue

Fox Chase

Philadelphia 11, Pa.

December 22, 1959


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

Dear Professor Wiener:

I enclose a reprint of the paper on function spaces which appeared in the von Laue Festschrift and I should be very glad to hear if you have made any progress in the direction which you suggested in your letter.

With very best wishes for the New Year.

Yours very sincerely,



A. L. Patterson

ALP:me

enc.

[ans 1/8/60]

Sonderdruck aus: „Zeitschrift für Kristallographie“, 112, 1959

Herausgegeben von M. J. Buerger, M. von Laue, F. Laves, G. Menzer, I. N. Stranski

Function spaces between crystal space and Fourier-transform space

By A. L. PATTERSON

Institute for Cancer Research, Philadelphia, Pennsylvania



AKADEMISCHE VERLAGSGESELLSCHAFT M. B. H.
FRANKFURT AM MAIN

1959

Function spaces between crystal space and Fourier-transform space

By A. L. PATTERSON

Institute for Cancer Research, Philadelphia, Pennsylvania

(Received June 8, 1959)

Auszug

Ein allgemeiner Ausdruck für die Kerne integraler Transformationen in Hermitschen Funktionen wird gegeben. Dieser Ausdruck leitet zu Mengen von Funktionenräumen, die zwischen irgend einem gegebenen Funktionenraum und seinem Fouriertransformationenraum liegen. Die, schon von WIENER und CONDON gegebenen, Kerne werden im Rahmen dieses Ausdruckes erhalten. Unter Benutzung desselben Ausdruckes wird eine neue Reihe von Kernen als „generalisierte Funktionen“ definiert. Das Problem der Erweiterung zu zwei und drei Dimensionen wird betrachtet und das geometrische Fachwerk für solche Transformationen wird besprochen.

Abstract

A general expression is given in terms of Hermite functions for the kernels of integral transforms. This leads to sets of function spaces lying between any given function space and its Fourier-transform space in one dimension. The kernels already given by WIENER and CONDON are obtained in terms of this general expression. Using the same expression a new set of kernels is defined as a set of generalized functions. The problem of extension to two and three dimensions is considered and the problem of geometrical frameworks for such transforms is commented on.

Dedication

It is not inappropriate to dedicate a paper on the transformation between crystal space and reciprocal space to MAX VON LAUE on the occasion of his 80th birthday since it was the author's reading of VON LAUE's classical paper on the effect of particle size on x-ray diffraction that founded a life-long interest in the function-space interpretation of x-ray diffraction. This dedication is written with deep gratitude for the inspiration, both scientific and personal, which has come from a friendship of more than thirty years with MAX VON LAUE.

Introduction

This paper is concerned with the continuous sequences of transforms which can be set up between function space and Fourier-transform space. Crystallographic interest in such matters arose several years ago in connection with discussions of the phase problem when it was recognized that most phase-determining properties such as positivity, atomicity, resolution, etc. are properties of crystal space while the Fourier coefficients whose phases are to be determined are defined in reciprocal space, i.e. Fourier-transform space. It was suggested that a function space between crystal space and reciprocal space might be found which would perhaps be simply related both to crystal and to reciprocal space. Although this end has not been achieved, some progress has been made in understanding the mathematical techniques which permit the expression of such continuous sequences of transforms.

In 1927 H. WEYL¹ suggested the relationship between the Fourier theory and the expansion of a function in a series of Hermite functions. His remarks led N. WIENER² in 1929 to a closed form for a fractional Fourier-transform. Without knowledge of the earlier work E. U. CONDON³ in 1937 rediscovered WIENER's result. Again without knowledge of earlier work the very same result was independently rediscovered by PETER G. BERGMANN⁴ and the writer⁵ in 1953. As will be indicated below the result which was so frequently rediscovered had distinct disadvantages from a physical point of view. The present argument leads to an indication of the large number of solutions to the problem which are available and points out one solution which seems physically more reasonable than the Wiener solution though it is closely related to it.

The present discussion is confined to the one-dimensional Fourier-transform although some mention is made of the possible methods of extension to two and three dimensions and the geometrical framework necessary for such an extension.

¹ H. WEYL, *Quantenmechanik und Gruppentheorie*. Z. Physik **46** (1927) 1-47.

² N. WIENER, *Hermitian polynomials and Fourier analysis*. J. Math. Physics Mass. Inst. Tech. **8** (1929) 70-73.

³ E. U. CONDON, *Immersion of the Fourier-transform in a continuous group of functional transformations*. Proc. Nat. Acad. Sci. **23** (1937) 158-164.

⁴ P. G. BERGMANN, personal communication (1953).

⁵ A preliminary report was given at the Ann Arbor Meeting of the American Crystallographic Association, June 1953.

Partial transforms

A function $f(x)$ and its Fourier-transform $F(u)$ are related by the expression⁶

$$F(u) = \int f(x) \exp(2\pi iux) dx \quad (1)$$

and its inverse

$$f(x) = \int F(u) \exp(-2\pi iux) du. \quad (2)$$

If we write (1) as the operational expression

$$F(u) = \tau\{f(x)\} \quad (3)$$

it is clear that (2) can be written as

$$f(x) = \tau^{-1}\{F(u)\} \quad (4)$$

and we have the well known result that the operation τ generates a group of order four.

If now we face the problem of imbedding the Fourier-transform in a continuous group as did WIENER² and CONDON³ we consider a function $\eta(\xi)$ in a space ξ somehow intermediate between the original function space x and the transform space u . We are then led to the consideration of two kernels p and q defined as follows

$$\eta(\xi) = \int f(x) p(\xi, x) dx \quad (5a)$$

and

$$F(u) = \int \eta(\xi) q(u, \xi) d\xi. \quad (5b)$$

The inverse kernels p^{-1} and q^{-1} must then satisfy

$$f(x) = \int \eta(\xi) p^{-1}(x, \xi) d\xi \quad (6a)$$

and

$$\eta(\xi) = \int F(u) q^{-1}(\xi, u) du. \quad (6b)$$

If the kernels p and q are to belong to a continuous group they must obey equations of the following type, i. e.

$$\int p_1(\xi_1, v) p_2(\xi_2, v) dv = p_{12}(\xi_1, \xi_2). \quad (7)$$

As formal consequences of (1), (2), (5), (6), and (7) the kernels and their inverses must satisfy the conditions:

$$\int p(\xi, x) q(u, \xi) d\xi = \exp(2\pi iux) \quad (8a)$$

and

$$\int p^{-1}(x, \xi) q^{-1}(\xi, u) d\xi = \exp(-2\pi iux); \quad (8b)$$

⁶ In this paper all integration limits are $-\infty$ to ∞ and are omitted for convenience.

and also

$$\int p(\xi, x) p^{-1}(y, \xi) = \delta(x-y) \quad (9a)$$

and

$$\int q(u, \xi) q^{-1}(\xi, v) = \delta(u-v) \quad (9b)$$

where δ is the Dirac delta function.

Expansion in Hermite functions

It is well known that the Hermite functions $\varphi_m(\sqrt{2\pi}x)$ defined in (A 1) of the appendix to this paper are characteristic functions of the Fourier integral equation⁷⁻⁹

$$\varphi(x) = \mu \int \varphi(u) \exp(\pm 2\pi iux) du \quad (10)$$

with the corresponding characteristic values $\mu = (\pm i)^m$. The kernels $\exp(\pm 2\pi iux)$ can then be expanded in the form

$$\exp(\pm 2\pi iux) = \sum_{m=0}^{\infty} (\pm i)^m \varphi_m(\sqrt{2\pi}u) \varphi_m(\sqrt{2\pi}x) \quad (11)$$

while the delta-function has the expansion

$$\delta(u-v) = \sum_{m=0}^{\infty} \varphi_m(\sqrt{2\pi}u) \varphi_m(\sqrt{2\pi}v). \quad (12)$$

Since the functions φ_m form a complete set of orthonormal functions, any function of two variables and in particular the kernels p, q , etc., can be expanded as a double series of products of Hermite functions i.e.,

$$p(x, y) = \sum_{m,n=0}^{\infty} p_{mn} \varphi_m(\sqrt{2\pi}x) \varphi_n(\sqrt{2\pi}y) \quad (13)$$

in which

$$p_{mn} = \iint p(x, y) \varphi_m(\sqrt{2\pi}x) \varphi_n(\sqrt{2\pi}y) dx dy. \quad (14)$$

In terms of the coefficients of series expansions of the type of (13) the relationships implied by (8) become

$$\sum_{r=0}^{\infty} p_{mr} q_{rn} = 0, m \neq n; = i^m, m = n \quad (15a)$$

and

$$\sum_{r=0}^{\infty} p_{mr}^{-1} q_{rn}^{-1} = 0, m \neq n; = (-i)^m, m = n \quad (15b)$$

⁷ R. COURANT und D. HILBERT, Methoden der mathematischen Physik I, Berlin, J. Springer (1931).

⁸ N. WIENER, The Fourier integral and certain of its applications. Cambridge at the University Press (1933).

⁹ International tables for x-ray crystallography II 2. 51. Birmingham, The Kynoch Press (1959).

while those implied by (9) become

$$\sum_{r=0}^{\infty} p_{mr} p_{rn}^{-1} = 0, m \neq n; = 1, m = n \quad (16a)$$

and

$$\sum_{t=0}^{\infty} q_{mr} q_{rn}^{-1} = 0, m \neq n; = 1, m = n. \quad (16b)$$

For no reason other than expediency it will be assumed in the remaining calculations that the series for p and q are diagonalized, i.e. that $p_{mn} = q_{mn} = 0$ for $m \neq n$. As a consequence of this assumption p and q will have the same characteristic functions, the Hermite functions, as the Fourier-transform. It must be emphasized, however, that there is no *a priori* virtue in this assumption since there are infinitely many orthonormal sets derivable from the Hermite functions which are characteristic functions of the Fourier-integral equation.

Thus for the diagonalized kernels we have from (15) and (16)

$$p_{mm} = \exp [i(\pi/2 + 2\pi r_m) \lambda m] \quad (17a)$$

and

$$q_{mm} = \exp [i(\pi/2 + 2\pi r_m) (1 - \lambda) m] \quad (17b)$$

in which λ is any real number and r_m is any integer. The inverse coefficients are the reciprocals of the above.

The Wiener-Condon solution

N. WIENER⁸ has considered the series expansion

$$\begin{aligned} K(x, y, t) &= \alpha[\pi(1-t^2)]^{-\frac{1}{2}} \exp \alpha^2 \left[\frac{2t}{1-t^2} xy - \frac{1+t^2}{2(1-t^2)} (x^2 + y^2) \right] \\ &= \sum_{m=0}^{\infty} t^m \varphi_m(\alpha x) \varphi_m(\alpha y) \end{aligned} \quad (18)$$

and has shown that it converges for $|t| < 1$. It has essential singularities at $t = \pm 1$. The interested reader can verify the formal result by use of the expansion formulae (A3) and (A4) and the general integral (A6). The expansion (13) with the specialized form for the coefficients (17a) can now be further specialized by setting $r_m = 0$ in the latter and writing $t = \exp i \lambda \pi/2$ and $\alpha = \sqrt{2\pi}$ in WIENER's series (18). We then have the Wiener-Condon result

$$p(\xi, x) = \sum_{m=0}^{\infty} [\exp i \lambda \pi/2]^m \varphi_m(\sqrt{2\pi} \xi) \varphi_m(\sqrt{2\pi} x) \quad (19)$$

which the formula (18) then sums in the closed form

$$\begin{aligned} p(\xi, x) &= \left\{ \left(\frac{1 + |\sin \lambda \pi/2|}{2 |\sin \lambda \pi/2|} \right)^{\frac{1}{2}} + i \left(\frac{1 - |\sin \lambda \pi/2|}{2 |\sin \lambda \pi/2|} \right)^{\frac{1}{2}} \right\} \\ &\quad \times \exp 2\pi i [x\xi/\sin \lambda \pi/2 - \frac{1}{2} (x^2 + \xi^2) \cot \lambda \pi/2]. \end{aligned} \quad (20a)$$

This result may be rewritten in the equivalent form

$$\begin{aligned} p(\xi, x) &= \left\{ \left(\frac{1 + |\sin \lambda \pi/2|}{2 |\sin \lambda \pi/2|} \right)^{\frac{1}{2}} + i \left(\frac{1 - |\sin \lambda \pi/2|}{2 |\sin \lambda \pi/2|} \right)^{\frac{1}{2}} \right\} \\ &\quad \times \exp 2\pi i \left[\frac{1}{2} \xi^2 \tan \lambda \pi/2 - \frac{1}{2} \cot \lambda \pi/2 (x - \xi/\cos \lambda \pi/2)^2 \right]. \end{aligned} \quad (20b)$$

The properties of this solution have been discussed in detail by WIENER² and CONDON³. For $\lambda \equiv 1$ or $3 \pmod{4}$ the coefficient of the exponential is real and equal to unity while the exponent reduces to $+2\pi i \xi x$ and $-2\pi i \xi x$ respectively (cf. 20a). For $\lambda \equiv 0$ or 2 , the coefficient is infinite complex while the dominant term in the exponent (cf. 20b) is $\pi i \cot \lambda \pi/2 (x - \xi/\cos \lambda \pi/2)^2$. Thus the kernel has infinite amplitude and oscillates with infinite frequency except near $x = \xi$ or $x = -\xi$. It can be shown, however, and most easily from (18) that the integral over one of the variables of that formula has the value 1 for $t = \pm 1$ and the value 0 in the limit $t = \pm i$. Thus the Wiener-Condon solution does provide a solution to the problem of imbedding the Fourier-transform group of order 4 in a continuous group but in doing so it leads to a type of delta function which is not at all close to any physical situation.

Solution in terms of sequences of functions

Instead of attempting to define the kernel $p(\xi, x)$ directly in a closed form as in (19) and (20) we shall set up a sequence of functions $p_\beta(\xi, x)$ depending on a parameter β such that

$$\lim_{\beta \rightarrow 0} p_\beta(\xi, x) \rightarrow p(\xi, x). \quad (21)$$

In proceeding to the limit the parameter β takes on a succession of values tending monotonically to zero. Processes of this type have long been in use in mathematical physics but they have only recently been legitimized by the work of L. SCHWARTZ and G. TEMPLE. This work has been summarized in the monograph by M. J. LIGHTHILL¹⁰ where

¹⁰ M. J. LIGHTHILL, Introduction to Fourier analysis and generalised functions. Cambridge, at the University Press (1958).

references to the original literature are given. All functions referred to hereafter must be considered as members of sequences such as (21). Functions defined in this manner are called generalized functions¹⁰.

We first consider the Hermite expansion of the function

$$E(\xi, x, \beta) = \exp[-\pi\beta^2(x^2 + \xi^2) + 2\pi i \xi x] = \sum \sum e_{mn} \varphi_m(\alpha\xi) \varphi_n(\alpha x). \quad (22)$$

This function clearly tends to the Fourier kernel as β tends to zero. When applied to (22) the expansion integral (A4) leads to an integral of type (A5) with constants

$$A = -(\pi\beta^2 + \frac{1}{2}\alpha^2); B = \pi i; \text{ and } C = \alpha.$$

If the series (22) is to be diagonal the relation (A6) must be satisfied and we must have

$$\alpha = \sqrt{2\pi} (1 + \beta^4)^{1/4}. \quad (23)$$

The integral (A7) is then

$$I_d = \frac{(\sqrt{1 + \beta^4} - \beta^2)^{1/2}}{\sqrt{2} (1 + \beta^4)^{1/4}} \exp 2ist(\sqrt{1 + \beta^4} - \beta^2) \quad (24)$$

and using (A4) it is easy to show that

$$e_{mm} = i^m (\sqrt{1 + \beta^4} - \beta^2)^{m+1/2}. \quad (25)$$

In analogy with the Wiener-Condon solution we obtain a continuous series of kernels by replacing i in (25) by $\exp i\lambda\pi/2$ and thus arrive at the series

$$p(\xi, x) = (\sqrt{1 + \beta^4} - \beta^2)^{1/2} \sum_{m=0}^{\infty} (\sqrt{1 + \beta^4} - \beta^2)^m \exp(i\lambda\pi m/2) \times \varphi_m(\alpha\xi) \varphi_m(\alpha x) \quad (26)$$

which for simplicity we abbreviate as

$$p(\xi, x) = Q^{1/2} \sum_{m=0}^{\infty} \tau^m \varphi_m(\alpha\xi) \varphi_m(\alpha x) \quad (26a)$$

$$\text{in which } Q = (\sqrt{1 + \beta^4} - \beta^2) \quad (26b)$$

$$\text{and } \tau = Q \exp(i\lambda\pi/2) = Q \exp i\varphi. \quad (26b')$$

We sum the series (26a) by using WIENER'S result (18) and obtain

$$p(\xi, x) = \{Q^{1/2} \alpha / [\pi(1 - \tau^2)]^{1/2}\} \exp \alpha^2 \left[\frac{2\tau}{1 - \tau^2} \xi x - \frac{1 + \tau^2}{2(1 - \tau^2)} (x^2 + \xi^2) \right]. \quad (27)$$

The correctness of our calculation is verified by noting that when $\tau = iQ$, the expression (27) reduces to (22) and when $\tau = -iQ$ to the conjugate complex of (22) as it should. When $\tau = \pm Q$, (27) becomes

$$p(\xi, x) = (\sqrt{1 + \beta^4}/\beta) \exp \left[-\pi \frac{(1 + \beta^4)}{\beta^2} (\xi \pm x / \sqrt{1 + \beta^4})^2 - \pi\beta^2 x^2 \right] \quad (27a)$$

which in the limit is clearly a delta-function at $\xi = \pm x$ as it should be. Thus the solution (27) behaves as a normal delta-function for $\lambda \equiv 0$ or $2 \pmod{4}$ where the Wiener-Condon solution (20) does not.

To study the behavior of (27) other than at the special points for which λ is integral we rewrite it in the form

$$p(\xi, x) = (C + iD) \exp(R + iI) \quad (28)$$

where

$$R = -\frac{\pi\beta^2(1 + \beta^4)}{(\sin^2\varphi + \beta^4)} \left(\xi - \frac{x \cos\varphi}{\sqrt{1 + \beta^4}} \right)^2 - \pi\beta^2 x^2 \quad (28a)$$

and

$$I = \pi \frac{\sin\varphi \sqrt{1 + \beta^4}}{(\sin^2\varphi + \beta^4)} [2 \xi x \sqrt{1 + \beta^4} - \cos\varphi (x^2 + \xi^2)]. \quad (28b)$$

The terms in the coefficient $(C + iD)$ are given by

$$C = \frac{1}{\sqrt{2}} [c + \sqrt{c^2 + d^2}]^{1/2} \text{ and } D = \frac{1}{\sqrt{2}} [-c + \sqrt{c^2 + d^2}]^{1/2} \quad (28c)$$

in which

$$c = \sqrt{1 + \beta^4} (1 - Q^2 \cos 2\varphi) / 2 Q (\sin^2\varphi + \beta^4) \quad (28c')$$

and

$$c^2 + d^2 = (1 + \beta^4) / (\sin^2\varphi + \beta^4). \quad (28c'')$$

The behavior of R is quite straightforward. For φ very small the coefficient of the first term is large for small β . It provides the rapid fall-off characteristic of the delta-function for $\xi \approx x$. As φ increases at constant β the coefficient decreases and the maximum moves toward the origin in ξ . The function flattens into the damping function of the complex sinusoid at $\varphi = \pi/2$.

The function I is zero for $\varphi = 0$. However, its coefficient grows extremely rapidly as φ increases, and reaches its maximum for $\sin\varphi = \beta^2$, i.e. at a very small value for φ . Thus although our solution behaves quite correctly at $\varphi = 0$, it very quickly goes into the rapid

oscillations characteristic of the Wiener-Condon solution. The amplitude of the oscillations is determined by the coefficient $(C + iD)$ as well as by $\exp R$. Calculation shows that D increases rapidly as φ increases from zero, i.e. there is a rapid phase shift which reaches a maximum in the neighborhood of $\sin \varphi = \beta$. Meanwhile the amplitude falls steadily from $1/\beta$ to unity as φ goes from 0 to $\pi/2$.

Thus the kernel (28) starts as a delta function for $\varphi = 0$ but rapidly develops violent oscillations of large amplitude near the origin of the delta function. These are of much higher frequency than that of the complex sinusoid to which the kernel tends as φ goes to $\pi/2$.

Discussion

In the preceding section we have set up a continuous set of functions each of which is a member of a sequence defining a generalized function. These generalized functions provide the kernels required to imbed the Fourier-transform in a continuous periodic group. The kernels which we have defined differ from those of WIENER² and CONDON³ in their behavior at $\lambda = 0$. Quite clearly, neither of these solutions is likely to provide the "intermediate" stage which might be useful in crystal-structure analysis since the rapid oscillations of these kernels will quickly disguise the functional properties of crystal space which one wishes to retain in a modified yet understandable form in the intermediate space.

We have already emphasized the arbitrary steps involved in selecting a particular solution from the more general solutions defined by (15) and (16). We also note that there is a certain arbitrariness in the requirement that the continuous group be periodic.

No attempt has been made to ascribe physical reality to the Wiener-Condon solution or to the solution which we have obtained. One type of physical problem which requires solution in terms of continuous transforms is as follows. Consider a convergent lens illuminated from the left by axial parallel monochromatic light. A line or cross grating is located to the left of the first focal plane of the lens. The diffraction pattern (Fourier-transform) of the grating will then be imaged in the second focal plane while the grating itself will be imaged in the image plane to the right of the second focal plane. The amplitude of light in any plane between the focal plane and the image plane must be expressible as a transform of the amplitude in any other such

plane. The kernels of such transforms must be of the type which we have discussed but unfortunately we have not succeeded in obtaining these expressions. They will certainly not form a periodic group.

Extension to two and three dimensions

It is easy to see that the argument of this paper can be extended readily to two or three dimensions. The expansion of (13) will require products of four or six Hermite functions and all the succeeding argument will be modified accordingly. While such considerations take care of the functional form of the continuous transforms, the geometrical framework necessary for the support of such functions is not easy to understand. If one could solve the two-dimensional problem of the cross grating and lens referred to above one might obtain a clue to the geometrical structure of the spaces between the reciprocal lattice of diffraction space and the base lattice of the image space. An analogous physical situation for the three-dimensional problem does not seem to exist. Some other criterion must therefore be used in choosing appropriate continuous transforms for this case.

The mathematical techniques necessary to set up a continuous sequence of vector triples between base space and reciprocal space have been set up in an earlier paper¹¹, where the use of the matrix which is the square root of the metric $g_{ij} = (\mathbf{a}_i \mathbf{a}_j)$ is used to establish an orthogonal matrix intermediate between the base and reciprocal lattices. The use of general roots of the same matrix will provide a continuous sequence of lattices between these two limits. Such matrices do not lead to a periodic group, although it is possible to construct a periodic transformation of this general type. Details of these questions must be left to a later publication.

Acknowledgments

The work of the writer has been supported by the National Cancer Institute (Grant C 1253) and by the Research Corporation. This assistance is gratefully acknowledged. The writer also acknowledges many valuable discussions with a number of colleagues, more particularly with Professor PETER G. BERGMANN.

¹¹ A. L. PATTERSON, An orthogonal unit vector triplet associated with a general lattice. *Acta Crystallogr.* **5** (1952) 829-833.

Appendix

Hermite functions

The Hermite functions⁷⁻⁹ $\varphi_n(\alpha x)$ may be defined by means of the generating function

$$\begin{aligned} S(\alpha x, s) &= \exp \left[\frac{1}{2} \alpha^2 x^2 - (\alpha x - s)^2 \right] = \exp \left[-\frac{1}{2} \alpha^2 x^2 + 2\alpha x s - s^2 \right] \\ &= \sum_{n=0}^{\infty} N_n \varphi_n(\alpha x) s^n / n \end{aligned} \quad (\text{A } 1)$$

in which the normalizing constant N_n is given by

$$N_n^2 = \sqrt{\pi} 2^n n! / \alpha. \quad (\text{A } 1 \text{ a})$$

From this result it is not difficult to prove that these functions are normal and orthogonal over the range $-\infty < x < \infty$ i.e. that

$$\int \varphi_m(\alpha x) \varphi_n(\alpha x) dx = 0, \quad m \neq n; = 1, \quad m = n. \quad (\text{A } 2)$$

In this paper we are interested in expansions of functions of two variables in terms of products of the Hermite functions of these variables i. e. we wish to consider double series of the type

$$f(x, y) = \sum_{m,n=0}^{\infty} A_{mn} \varphi_m(\alpha x) \varphi_n(\alpha y). \quad (\text{A } 3)$$

It then follows from (A 1) that the Fourier coefficients A_{mn} of the expansion are to be obtained from

$$\int f(x, y) S(\alpha y, s) T(\alpha x, t) dx dy = \sum_{m,n=0}^{\infty} A_{mn} N_m N_n s^m t^n / m! n! \quad (\text{A } 4)$$

in which $T(\alpha x, t)$ is defined as in (A 1).

In the evaluation of integrals which arise from (A 4) we need the integral

$$\begin{aligned} I &= \iint \exp[A(x^2 + y^2) + 2Bxy + 2C(xs + yt) - (s^2 + t^2)] dx dy \\ &= \pi(A^2 - B^2)^{-\frac{1}{2}} \exp \{ [2BC^2st - (A^2 - B^2 + AC^2)(s^2 + t^2)] / \\ &\quad (A^2 - B^2) \}. \end{aligned} \quad (\text{A } 5)$$

In this paper we emphasize series of the type (A 3) which are diagonalized, i.e. for which $A_{mn} = 0$ for $m \neq n$. For such cases the relation

$$A^2 - B^2 + AC^2 = 0 \quad (\text{A } 6)$$

must hold between the constants of (A 5) and the integral I takes on the special value

$$I_d = [\pi/C(-A)^{\frac{1}{2}}] \exp(-2Bst/A). \quad (\text{A } 7)$$

43 Grove Street
Boston 14, Mass.

December 22, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

I am writing in behalf of the Old South Seminar, the young adult group at Old South Church (Congregational) in Boston. We would be most appreciative if you would give us a 45 minute-one hour talk on Sunday, March 13 or Sunday, May 15, 1960 at 7:30 P.M. Miss Claire Anne Weiman spoke to you about this a few days ago on campus, and you very kindly consented to her request. I think it only right, however, to ask you again by letter.

We would be thrilled to have you speak on the general topic of man's moral responsibility in the field of science. Your excellent book "The Tempter" has aroused much interest in the problems involved in this area, as far as we young working people are concerned.

Margaret Kruger has spoken to me many times of your very fine personal qualities, and I assure you we would be deeply appreciative of your giving a bit of your valuable time and insights to our group.

For your information, our group is composed of approximately three hundred members; some graduate students and many working young people who are college graduates. In our Sunday evening meetings we have been considering the problems of religious and moral responsibility in all aspects of our lives, vocations and professions. We have, sadly enough, neglected the field of science in our considerations, and we feel that you are the perfect person to enlighten us in this area.

I look forward to hearing from you soon, and I thank you for your consideration of our request.

Very truly yours,

Mrs. Courtney E. Peterson
Mrs. Courtney E. Peterson

[ans 1/7/60]

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF STATISTICS
BERKELEY 4, CALIFORNIA

Statistical Lab.

December 23, 1959


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

Dear Professor Wiener:

I have taken the liberty of designating you as a reference in my application for a Research Professorship in the Miller Institute for Basic Research in Science (a University of California Institute) for the year 1961-62. Here enclosed is a copy of the Description of Research Program which I sent with the application, and a copy of R. G. D. Allen's review of my article, which I also submitted in support of my application. I believe the Miller Institute will contact you for a recommending letter, for which I shall be very grateful to you.

Best wishes to you and your wife for a bright and happy New Year.

Sincerely,



E. W. Barankin

EWB:hh

Encl.

[enc 1/8/60]

THE UNIVERSITY OF MICHIGAN
ANN ARBOR

December 23, 1959

Professor Norbert Wiener
Institute Professor, c o Dept. of Mathematics
Massachusetts Institute of Technology
Cambridge 33, Mass.

Dear Professor Wiener:

This summer, from June 13 through June 24, the University of Michigan will be holding a Summer Conference Course on "Programming Concepts, Automata, and Adaptive Systems". I would like to invite you to give a series of five one-hour lectures during one of the two weeks of the course.

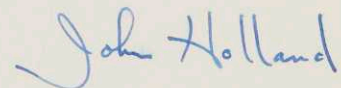
The purpose of this Conference Course will be to bring together men doing advanced research in the Communication Sciences area, in order to present to the students (research workers from industrial, government, and university laboratories) the latest advances and give to them an understanding of the implications of these advances. Among the other invited speakers are Professor Arthur Burks, Dr. C. Y. Lee, Professor Alan Perlis and Dr. Oliver Selfridge.

For your lectures the University will be able to pay a total of \$750 for an honorarium and expenses.

If you can accept and if you have a preference for one of the two weeks I will try to arrange the scheduling accordingly. We should like notes on the lectures in advance so that they can be distributed to the students; notes that you have already prepared or reprints of articles will suffice. One or two copies of the material should reach us by April 1 to allow time for retyping and duplication.

If there is any further information you would like, I would be happy to furnish it. So that the program can be settled in advance of January 15, an early reply would be appreciated.

I hope very much that you can participate, Professor Wiener --



John H. Holland
Course Chairman
Logic of Computers Group
4001 Angell Hall

JHH:dc

[ans 1/7/60]

Professor Norber Wiener
Mass. Institute of Technology
Boston

Montréal, december 23, 1959

Dear Professor:

I hope you have received my 5th letter.

Now, the secret is gone.

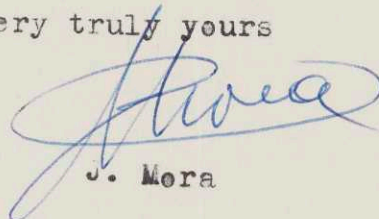
Why God has made me so big a killer?

This is the final judgment, the general burial.

God speaks to children in dreams.

Good holidays and happy New Year

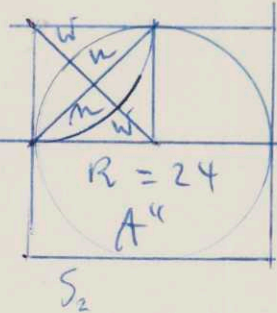
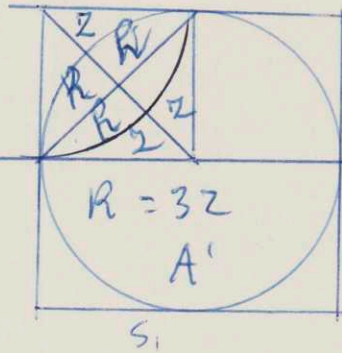
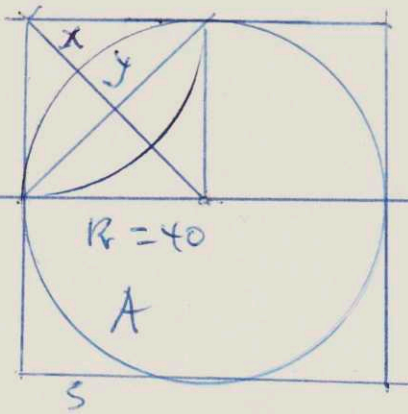
Very truly yours

A handwritten signature in blue ink, appearing to read 'J. Mera', written in a cursive style with a large loop at the end.

J. Mera

3484 Jeanne Mance
Montreal

$$S^2 = S_1^2 + S_2^2$$



If $\eta = 3.2$,

$$A = R^2 \eta = 40^2 \times 3.2 = 5120 \text{ square units}$$

$$S^2 = 80^2 = 6400 \text{ sq. units.}$$

$$6400 - 5120 = 1280 = 8x$$

$$x = 1280 : 8 = 160 \text{ square units}$$

$$y = 400 - 160 = 240 \text{ square units ; } \frac{y}{x} = \frac{240}{160} = \frac{3}{2}$$

$$16y + 8x = 16 \times 240 + 8 \times 160 = 3840 + 1280 = 5120 \text{ sq. units} = A$$

$$16y + 16x = 3840 + 2560 = S^2 = 6400 \text{ square units}$$

$$A' = 3.2 \times 32^2 = 3276.8 \text{ square units.}$$

$$S_1^2 = 64^2 = 4096 \text{ square units.}$$

$$4096 - 3276.8 = 819.2 = 8z$$

$$z = 819.2 : 8 = 102.4 \text{ square units.}$$

$$h + z = 256 ; h = 256 - 102.4 = 153.6 \text{ sq. units}$$

$$16h + 16z = 2457.6 + 1638.4 = 4096 = D_1^2$$

$$16h + 8z = 2457.6 + 819.2 = 3276.8 \text{ square units} = A'$$

$$A = 24^2 \times 3.2 = 1843.2 \text{ square units}$$

$$S_2^2 = 48^2 = 2304 \text{ square units}$$

$$2304 - 1843.2 = 460.8 = 8w$$

$$w = 460.8 : 8 = 57.6 ; n = 144 - 57.6 = 86.4 \text{ sq. units}$$

$$16n + 8w = 1382.4 + 460.8 = 1843.2 \text{ square units} = A''$$

$$A' + A'' = A ; 3276.8 + 1843.2 = 5120$$

(From my book — no published — "The exact calculation of η ")

(Do not print without the written permission of the author)

W.S.Amberson
Waynesboro Pa.
December 28 1959.

over k

Dr. Norbert Wiener
Prof. of Math.
Mass, Inst. Technology.

Dear Doctor;-

On reading the account of recent reports of the Electronic Brain and the rapid action in computation I wish to say the merits of the machine seem beyond all human understanding, However we do have those clever money eaters the Pin Ball Machines very complicated in results.

MY question is how far do the mathematicians go today in reckoning our economy via electronic formulae?

In addressing you I fear I may be asking for it. some sort of rebuff for the reason I may rate only as an expert rather than a certified public accountant and have no place in the society of extraordinary mathematicians. This fact is not a hindrance to my thinking I once met Mr Einstein and Mr Pupin the Scientist. My family have lived on American Soil 1700 -59 in the twentieth Century, to see the development through a few generations .

Like Huxley the Essayist I have aspired to Journalism without any recognition by the society. I have therefore written an essay called Sunday at Home.

I am enclosing this document for your perusal and comment without obligating you in any manner and I trust you will be generous enough to treat me gently if I am encroaching upon your time.

I am seeking an outlet for the writing, at date not having any one willing to publish the raw statements,

This refers to a scientific test as well as an economic calculation and I trust you will find time to read it or have it read by some of the persons interested in our National Economic problem and its solution, Perhaps the Mechanical Brain could solve the problem.

Wishing you the greeting of the New Year I am

Very Truly Yours

128 West Main St.

W.S.Amberson

W.S. Amberson

Sunday at Home.

By *H. S. Amberson*

Waynesboro Pa.

December 28 1959.

It is said; "It is fashionable to remain at home these Days". Strange to say Sunday may be excepted, as so many of us drive to the place of our own choice good and bad alike. A few millions of us may either by necessity or by choice rest at home. This fact becomes of interest to our friends and neighbors to inquire about the whys and wherefores which hold so many persons to their own fire-sides. An answer could follow as; I like T.V. Other wise some may say; We have T.V. but I am fed up on the show I seldom look at it.

Relating the experience of a man with an averred flare for Sports weather and news all of which have a reaction to the mind and some times touch the heart the Sunday Program consisting of Sermons from the hills, valleys, and mountains, cities, towns and other wise isolated missions in distant places accompanied with songs, testimony and thanksgiving, benedictions and blessings has an appeal and furnishes a contact rare and many times profitable.

While Sermons may be found either in the synagog or on the Ball field, discussions of public affairs by highly trained students on a panel, by skilled news men, Senators and statesmen, on various channels well arranged on a time schedule. If the audience is truly interested in getting some stimulus to his brain he finds it in these special feature broadcasts.

That which is said; may please and displease, stir the mind to straight thinking or disturb it to some adverse ideas. News at all times is mostly shocking tales of disaster, distress, murder, rapine, and disorder as in the regions of a Steel Strike. We get what we pay for and no more, is the conclusion whether we ask for it or not. Those sitting at home may find it difficult to get away from the house and the diversion afforded by the Orators.

Specific programs as of yesterday furnish a premise for a comment without criticism and one is able to say; The panel sets up some very intelligent man and women, all of them able to ask some pertinent questions and furnish some plausible answers.

But yesterday we had the President of the American Bankers Association with a panel of students of economy and banking or just human relations. The most significant statement made, was both enlightening and practical I cannot quote it but give my interpretation of the Association Presidents answer, as follows We do not base our objective of the law of supply and demand nor on the rates of interest but rather on the lending of money to persons under terms to assure a return of the money with int. The Banker is handling the funds of other people and is pledged to return it to their customers.

When we switch over to the News men touching on the news from all countries our thoughts become focuses upon the economic race between nations. After all is said and we sum up the talk we find that while the news men have been in the field in each country the news tends toward, Dogma, prophesy, propoganda inducive to lead the readers into the positive line of thinking either to the right or to the left.

If we turn from the T.V. and read a journal we find that mortal man does have a conscience under pressure he is apt to



Jagdschloss Grunewald

MIT DEN BESTEN WÜNSCHEN

ZUM WEIHNACHTSFEST

UND FÜR EIN GLÜCKLICHES NEUES JAHR

H. B. M. Wieda

INSTITUT FÜR GÄRUNGSGEWERBE

make a public confession. Editors are not exempt from this feature and we find the confession written out in plain words the big lie has been used. Both politicians and economists admit this is true, and the editor sitting on the green carpet deplores the nakedness of children and the condition of people living in mud huts, in the hottest climate in all the world. This pitous condition extant as it is gives rise to the value of the Dollar at home and abroad, Feeding the hungry from the common kettle is a matter of debate as many demand Caviar while so many have no meat and potatoes.

A solution is offered calling for a master plan while the Kings Princes and Potentates all agree Communism is not desirable Marxism and Capitalism are obsolete and socialism is the only avenue of escape. A no tax plan, but where is the money to come from. This idea calls for a dictatorship over all.

Taking a view of the common market after hearing all the talk by the paid for broadcasters including the plug in comments we admit only this subject must be treated on the level of a scientist to show what inflation and deflation means.

Taking a test tube bent as a U, we fill the tube partly full of mercury and find that the M rises to a common level on each side of the U and remain in equilibrium. The only way it is disturbed is by applying force by some one having the power to use the force. Thus the M is disturbed in two ways First by applying force by using a plunger the M is forced down on one side it rises on the other side to a height equal to the loss on the other side, when the pressure is removed it returns to the common level but if the plunger is pulled further the mercury is lifted to another level causing a drop on the other side.

This permits saying; inflation is caused by the application of an out side force by some one in power.

It is obvious if a game of ball is played, the winner takes the gate receipts and the losers go poor. the loser is often barred from any further participation in the game.

The master plan seems to be a solution but some ask Where is the money to come from, and what the tax rate. Must we borrow to live and who will lend the money to a poor man.

The question is; what about our credit. the banker discussed the subject from this stand point, the politician takes refuge in the region of Defense and the Billions needed to give the skilled workers employment.

We do not sanction idleness, ignorance, nor crime but we do tolerate brutality, special favors, fraternal ties, political slates, and fixed elections. Extortions and court trials.

If the News is correctly reported Pensons are costly Health Insurance resting in Blue Cross, Farm subsidies in the balance Freight rates up for debate nad defense appropriations in question. The Broadcasters inquire will the economy keep up and it appears there is a thin thread of fear running down the spine of most workers.

Revamping the Economy without disturbing Management Banking and the Labor Union leaves us to dream a bit about the

The master plan with a credit card for each adult citizen which of course is not a matter of funds but a matter of the Credit Liability set up against the Abundance required to permit an estimated level for the economy desired.

Money in circulation is far better than money in reserve vaults, and the idea of co-operation must prevail over competition is a social equilibrium is desired, taxation reduced and the Federal, State and Local governments evoke the will of the people.

If we remain in the state of selfish processes we must still haggle and heckle over the wages paid to steel men and all skilled workers, and reast under the tricks of the money collectors, beggars and pan handlers.

We are advised the elaction Campaign ahead present a few names of men popular among the party leaders and seemingly agreeable to the voting party members; but it is not evident that a platform is mentioned, "e may know who but we do not know for what we may be asked to vote. If we remove the blind fold from the eyes of the voting citizens perhaps we could see the credit balance as the Libilities we must meet if we are to enjoy a relief from the ideas of Applied force by the special powerful agents holding positions and directing the movements in the Common Markets.

From B Herrod & 70 years self-education when I could not reconcile our status with schooling in many forms such as news-business & your thoughtlessness, quoted by them!

Oakland Calif 850 6th ave Dec 28 '59.

Dr Weiner (Unwise mob-reaction to clipping adversely affects us all, my plaint)

Your first lapse init is in saying mankind COULD BECOME slaves---when we all are slaves of the suicidal-conspiracy that subjugated, regiments & robbed us of natural rights for business, its Kingpin, to exploit every way possible! Thus in your thoughtlessness you deceived by omission & news-business gladly quoted you

That is why business of MIT does not try to show that the origin & purpose of civilization & institutions such as itself justifies them! As you are aware, it is nature that we develop physically & mentally from action & we weaken from inaction! We all are equipped to naturally act for ourselves & to develop thereby as did our first parents & as do other land-animals UNCIVILIZED! When machines act for us & we weaken thereby, they are unnatural & inanimate Frankensteins & your error is in attributing THE NATURE of their long ranged wisdom! But these errors only scratch the surface of your thoughtlessness!

When I was supposed to learn by listening to unwarranted doctrines by the thoughtless that conflicted they merely made me skeptical! As they conflicted within nations & between nations, the vast majority of their listeners reflected their conflict in countless ways until the attrition destroyed everything, leaving the earth dotted with barren-wastes, ONCE CIVILIZED! By thoughtlessness & defeatism, TIME CAPSULES anticipate COMPLETE DESTRUCTION of USA & other nations! From that conflict with their own kind, distinctive to we civilized land-animals, that honey-combs society statistics show that everything is being destroyed faster and in greater scope than ever before when a FORCED-INCREASE in population FOR MORE FOR BUSINESS to exploit, needs everything more than ever before! The end-result, all that counts, is shockingly obvious to those that want to see, the pitifully few able to think & accept vital & hideous reality when it discredits false-doctrines & beliefs with which the UNTHINKING MAJORITY is inoculated by schooling!

You were inoculated when you chose feather-bedded servitude & thereby impudently impugn that infinite wisdom that did not create our first parents as servants nor as master thereof! Conspiracy had the purpose for its origin!

2 Adding needless confirmation & discounted by schooling, a family is a COMPLETE SPECIES & naturally an INDEPENDENT ENTITY like our first one & like the wiser bear's that owes nothing to other than itself & needs no aid such as schooling & its betrayal of victims is purported to be to the civilized family! Thus servitude with no pl^ace in nature or reason was as repulsive to our earliest & FREE antecedents as it would be to the wiser bear! But by subjugating & regimenting them by ruthless mob-action conspiracy forced servitude without which we could not be exploited on them. As remuneration for instrumenting conspiracy, feather-bedded servitude is delegated power over people sans their consent, engendering righteous resentment & inviting retaliation until everything is destroyed! Where mine is this informative reality, not to rock the boat of a sinking society, it is harmful by the unthinking majority! It is schooled to justify stepping on faces of the minority to its sorrow as it is vulnerable to a stronger & more ruthless mob, just what USA fears in Russia & what Latin-America feared in USA when Nixon was mobbed by TRADITIONAL STUDENT REVOLT the cause of which schooling refuses to try to explain! It feels that the less said on the subject the less likely are its dupes to get wise! (You can refute this by sending me your explanation).

Here is the proper one! Since conspiracy devised institutions to act for & provide for us for a price the cumulative weazening from inaction leaves us ADULTS able to propagate at I0 to I3 but unfit otherwise! As the dominating & unfit majority belittles & condemns these teen-age ADULTS to a resented-category of CHILDREN that distinctive problem is compounded when students reflect ruthless mob-action by their own kind & smash schools, etc, to retaliate! Not being civilized, other land-animals never form mobs to abuse & kill their own kind as we are forced to do or to pay for by civil government, an inanimate Frankenstein!

With the ultimate in power over people, sans their consent, a top-echelon is so incapable of rational recourse in quarrels with counterparts that it resorts to mass-murder instead, disregarding that murder in any degree is repulsive to people as it could have ended mankind in its incipiency, just as that mass-murder threatens to exterminate mankind today! Of course it has to be guarded to keep from being killed by resentful retaliation, reflecting its murderous proclivity! It makes law to execute the individual for its own crime of mass-murder in lesser degree & you thoughtlessly approve it all by not denouncing the bestiality!

Furthurmore, if not diverted from it by schooling you should be aware that as the world's people only know of most of their counterparts elsewhere by hearsay they have no reason for hating them or for quarrels, issues & least of all the PURPOSE when formed into murderous mobs by Frankenstein governments & forced to kill or to pay for killing their inoffensive counterparts! That as premediated mob-murder is not indigenous to them, they naturally hate & fear it, masked as civil, religious & foreign war! By themselves? No! By conspiracy that uses them in it for murderous-theft & subjugation of lands & people for more for business to exploit, consummating that PURPOSE! Thus democracy vs communism is a diversionary & fake issue to enlist stronger mobs of dupes by conspiracies, one to hang onto lands & people stolen & purchased all over the globe & the other to steal them & even those thieving nations themselves! People are taxed an enormous sum so State Departments can poison themselves with booze & become the world's drunken-drivers!

In one of many ways people are debased & degraded to make them easier for schooling to hoax & for business to exploit; business creates that booze & govern-
ment licenses it to poison the people! The resulting travail is ~~xxxx~~ ^{equal} if not worse than it is from war! But even so, to debase the quality of the strain the BEST YOUNG BROODSTOCK is sacrificed as a DISPENSABLE MINORITY even denied its natural right to live in UNIVERSAL SERVICE as tho all CREATION was equally DEGENERATE, killing the young to spare the aged!WOWEE!

It is of ominous-significance that as people hate & fear war they are taxed for futile expedients to END IT with business the only medium to profit from it & from those expedients! Double-shotting the turn! Only the pitifully few able to think reality that as the world's people hate & fear war they could end it BY DO-ING NOTHING TO AID IT, the way other & wiser land-animals AVOID mass-killing of their own kind! As MIT like religion is business, with business establishments, business executives & business treasuries, that simple solution is obnoxious to both & even when I reminded them of it they refused to disseminate it, betraying selves, society & posterity if that folly leaves any this time! As news-business ^{ing} quoted you in tacitly approve war, I will be intereted to see if it quotes you in that solution for war, but wont hold my breathe until either does! HaHa. If that machine is so brash as to disseminate that solution its my idea that it will be given the bums-rush! What a ghastly pity! Excerpts from THE TRUE PICTURE.

HUGHES

Systems Development Laboratories

HUGHES AIRCRAFT COMPANY • CULVER CITY • CALIFORNIA

Telephones: EXmont 8-2711 - Upton 0-7111

December 28, 1959

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

Dear Dr. Wiener:

Attached is a print which I thought you would enjoy having since it is such a good likeness.

I hope you had a very pleasant Holiday. We have been watching the comments about the weather you have been having -- winter certainly has settled her icy fingers on the east early this year.

Good luck to you for the New Year.

Very sincerely,

E. L. Michaels

E. L. Michaels, Head
Advanced Scientific Education

Prof. Norbert Wiener
Mass. Institute of Technology
Boston

Montreal, december 28, 1959

Dear Professor:

I hope you have received my 6th letter.

As you can see, the exact calculation of π is not a joke.

The impossible has been done.

Nobody can make the impossible.

The exact calculation of π was not impossible.

The possible has been done.

It is impossible that π be an irrational number.

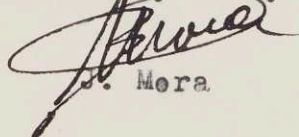
Mathematicians made the impossible.

I have done the possible

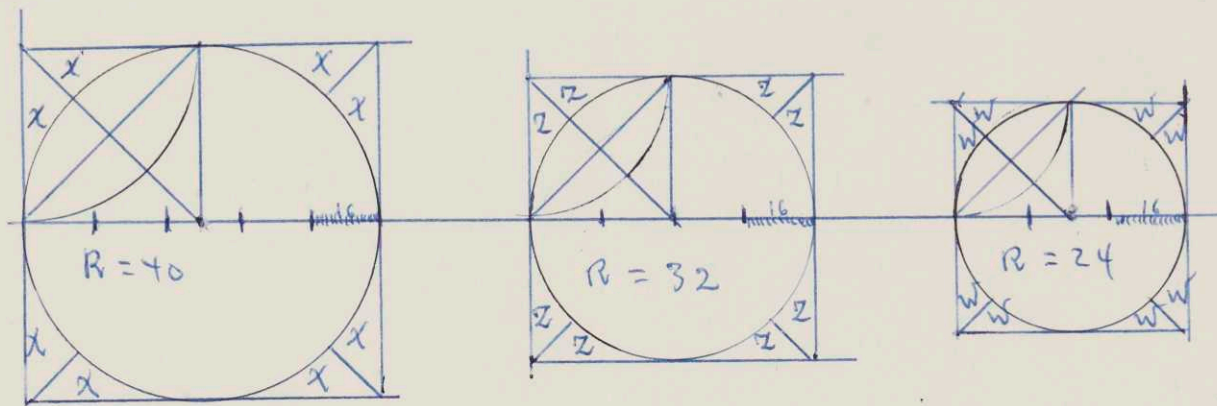
You have all you need in order to understand that $\pi = 3.2$.

Don't expect more letters.

Yours very truly


J. Mera

3484 Jeanne Mance
Montreal



$$40^2 \eta = 80^2 - 8x \quad ; \quad \eta = \frac{80^2 - 8x}{40^2}$$

$$32^2 \eta = 64^2 - 8z \quad ; \quad \eta = \frac{64^2 - 8z}{32^2}$$

$$24^2 \eta = 48^2 - 8w \quad ; \quad \eta = \frac{48^2 - 8w}{24^2}$$

$$\frac{48^2 - 8w}{24^2} = \frac{64^2 - 8z}{32^2} = \frac{80^2 - 8x}{40^2}$$

$$\frac{2304 - 8w}{576} = \frac{4096 - 8z}{1024} = \frac{6400 - 8x}{1600}$$

(The values of x, y, z, h, w and n were given to you in the last letter)

2

Dividing by 8:

$$\frac{288}{72} - w = \frac{512}{128} - z = \frac{800}{200} - x$$

Making the cross-product of the first and second members.:

$$36864 - 128w = 36864 - 72z$$

$$36864 - 36864 = 128w - 72z$$

$$128w - 72z = 0$$

$$128w = 72z$$

$$z = \frac{128w}{72}$$

Substituting w by its value:

$$z = \frac{128 \times 57.6}{72} = \frac{7372.8}{72} = 102.4.$$

This was the value obtained for w

$$w = \frac{72z}{128}$$

Substituting z by its value:

$$w = \frac{72 \times 102.4}{128} = \frac{7372.8}{128} = 57.6$$

The values of z and w are the real ones.

You are really dead, Archimedes.

$$\frac{288}{72} - \frac{w}{200} = \frac{800}{200} - \frac{x}{200}$$

$$288 \times 200 - 200w = 72 \times 800 - 72x$$

$$57600 - 200w = 57600 - 72x$$

$$72x - 200w = 0$$

$$72x = 200w$$

$$x = \frac{200w}{72}$$

The value obtained for w is 57.6

$$x = \frac{200 \times 57.6}{72} = \frac{11520}{72} = 160$$

This was the value obtained for x

$$w = \frac{72x}{200}$$

$$= \frac{72 \times 160}{200}$$

$$= \frac{11520}{200} = 57.6$$

All is in perfect order.

$$\frac{512}{128} = \frac{z}{200} = \frac{800}{200} = \frac{x}{200}$$

$$512 \times 200 = 200z = 128 \times 800 = 128x$$

$$102400 = 200z = 102400 = 128x$$

$$128x = 200z = 0$$

$$128x = 200z$$

$$z = \frac{128x}{200}$$

The value of x is 160

$$z = \frac{128 \times 160}{200}$$

$$= \frac{20480}{200}$$

$$= 102.4$$

$$x = \frac{200z}{128}$$

$$= \frac{200 \times 102.4}{128} = \frac{20480}{128} = 160$$

Archimedes, Shanks, Doctor Ferguson, Ptolemy, Vega, Vieta, etc. etc.,
forgive me, I didn't want to kill you.

(Not to be reproduced without the written
permission of the author)

(From my book, "The Great Calculation of π ")



COMITATO NAZIONALE PER LE RICERCHE NUCLEARI

SCUOLA DI PERFEZIONAMENTO IN FISICA TEORICA E NUCLEARE

NAPOLI - Mostra d'Oltremare, Pad. 19 - Telef. 303514

li 29 Dicembre 1959

Prof. Norbert Wiener
Massachusetts Institute
of Technology
Cambridge 39, Massachusetts.

Dear Professor Wiener:

I have received your letter of December 4 with great pleasure, as it confirms your intended visit to Naples, to which we are looking with great expectation.

The time you suggest for your visit suits perfectly our own academic schedule, which, as you know, begins usually with November, and will start next Fall in advance, as we shall hold the annual congress of the Italian Physical Society in Naples from September 29 until October 4th. As for the duration of your stay, it will be entirely of your choice, our only wish being that it may be as long as possible.

We hope that you will consider Mrs. Wiener and yourself as guests of our Institute. You shall be entirely free of disposing of your time as it will suit you best; we shall be of course eager to hear your lectures and to have your advice, but you will be the one to decide their number and schedule. We do not certainly wish to overburden, or even to burden, you in any way.

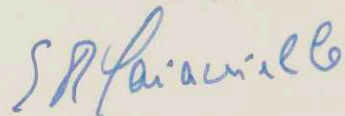
As for the matter of the expenses, I see no problem on our side in refunding the fare of Mrs. Wiener to and from the U.S. as a part of our contribution to your personal expenses; we shall be indeed very glad to do so. My Institute will, in addition, pay to you an honorarium of 400.000 lire per month for the period of your stay; please consider this figure merely as a refund of your expenses, for which it will certainly suffice, and not as a salary of any sort, for which I do not think any figure at our scale would be adequate.

I shall be in the States around June, and I shall not fail to pay you a visit so that we may discuss our programs in further detail. In the meantime, please do not hesitate to let me know any wishes you may have in this connection.

Finally, I should like to thank you for your novel, which I have received and greatly appreciated. It is not befitting that I express to you my admiration for the purity of your style, because, as a foreigner, I am not a qualified judge; I have received, in its full strength, the message your work purports to convey to the younger generations, and am sure that it will be a useful lesson to many, a subject for meditation to all.

Please accept with Mrs. Wiener my best wishes for a happy New Year.

Sincerely,



E. R. Caianiello

ERC:amh

[ans 1/22/60]

Newsweek

NEWSWEEK BUILDING • 444 MADISON AVENUE • NEW YORK 22

PLAZA 2-1500

EXECUTIVE OFFICES

December 29, 1959

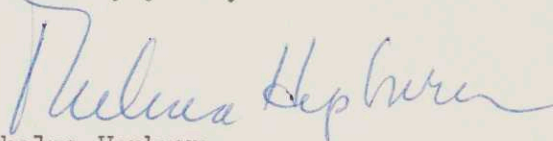
Dr. Norbert Wiener
Mathematics Department
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener:

I thought you would be interested in seeing the enclosed copy of Newsweek's January 4th issue which includes a Science story concerning your work on electronic brain machines.

The report begins on page 54, and I hope you enjoy reading it.

Sincerely yours,



Thelma Hepburn
Public Relations

sab

[ans 1/18/60]

EASTERN PSYCHOLOGICAL ASSOCIATION

OFFICE OF THE SECRETARY

CARL H. RUSH
STANDARD OIL CO. (N.J.)
80 ROCKEFELLER PLAZA
NEW YORK 20, N.Y.

TED BATES AND CO.
666 FIFTH AVE.
NEW YORK 19, N.Y.

ADDRESS CORRESPONDENCE TO:

P.O. BOX 252
GLENBROOK, CONN.

December 29, 1959

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

Dear Dr. Wiener:

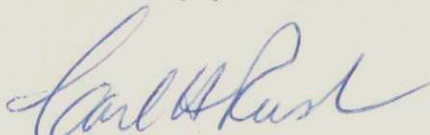
For the past few years, the Eastern Psychological Association has been scheduling invited addresses during its annual meetings. The purpose of these is to acquaint the membership with significant research programs and thinking in various areas of psychology. This year we should like very much for you to give one of these addresses. The specific topic would be, of course, of your own choice.

You would have a chairman and a discussant. The Program Committee has tentatively decided that, if you accept our invitation, we would ask Dr. L. W. Max of New York University to serve as discussant of your session and Dr. George Miller of Harvard University to serve as chairman. I trust these would meet with your approval.

The total time allotted would be one hour and thirty minutes. We have tentatively reserved space for you at 10:30 Friday morning, April 15. The meetings this year will be on April 15-16 at the Statler Hilton in New York.

If you decide that you will be able to do this for us, would you please let us know and send along a title for your address which I might include in the printed program. It will also be helpful if you provide the discussant and chairman with an address or an outline before the meeting. I will send them along if you send them to me.

Sincerely yours,


Carl H. Rush

CHR:rr

[ans 1/7/60]



THE JOHNS HOPKINS UNIVERSITY · BALTIMORE 18, MARYLAND

DEPARTMENT OF CHEMISTRY

December 30, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

I am writing to tell you about a series of seminars to be held in New York City this coming winter and spring at the residence of Mrs. William Hale Harkness on topics connected with relations between science, philosophy and the arts. I hope that you may be interested and able to attend some or all of these meetings. The idea for these meetings originated in discussions between Mrs. Harkness, Dr. F.S.C. Northrop, Dr. Henry Margenau, Dr. F. L. Kunz and myself in which we have been exploring relationships between concepts in the theory of relativity, quantum mechanics and information theory on the one hand, and aspects of form in philosophy, music and art. We feel that there is a core of thinking which binds all these different disciplines far more closely together than is generally appreciated. This approach also provides a path to a much deeper understanding of both the convergent and divergent elements in world cultures today. It is especially illuminating for the relations between thought and feeling in the Eastern and Western parts of the world.

Because of the critical tensions in world relationships, we feel that it is especially important to do everything possible to get a fuller understanding of the intercultural relations at the level of fundamental ideas and perspectives. Although this may seem an overly academic approach, ideas have impacts and consequences at practical levels in the long run. We believe that the new concepts today in scientific thinking offer profoundly new approaches to understanding in philosophy and the arts and, through this, to deeper understanding of cultural and world relationships.

The dates for the seminars are:

January 15	Professor Northrop
March 4	Professor Andrews
April 1	Professor Margenau
May 6	Dr. Kunz

The seminars will be held at the residence of Mrs. Harkness, Penthouse A, Hotel Westbury, Madison Avenue at 69th Street, New York City on Friday Evenings at 8 p.m. Mrs. Harkness has asked me to say that she will be happy to have you spend the night at the Hotel Westbury as her guest.

We all hope that you can join with us in these discussions. As the accommodations are limited, we are inviting only about twenty-five persons, and we will be grateful if you can let us know as soon as possible whether you can attend the seminar on January fifteenth. A fund has been provided to cover transportation costs for guests from out-of-town.

Sincerely yours,

Donald H. Andrews

B. N. Baker Professor of Chemistry

DHA/ec

[ans 1/8/60]

KEYES C. GAYNOR
CONSULTING ENGINEER
421 BENSON BLDG.
SIOUX CITY, IOWA

December 30, 1959.

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

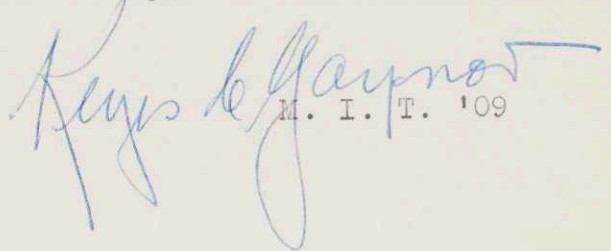
Dear Professor Wiener;

I have just finished reading the Tempter.
I enjoyed it because many of the situations you
relate parallel much of my own experience even
as to patents.

As to expert testimony. I do a good deal
of it but I never take a case unless I can do
it without compromising myself.

It has not been easy for me out here but
I am still alive.

Sincerely,


M. I. T. '09

KCG/s

[and 1/8/60]

3 James Street
Auburn, Maine
December 30, 1959

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

Dear Dr. Wiener:

I have read in the papers about the checker playing computer.

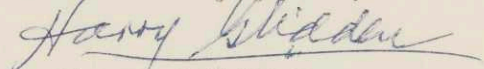
If this computer is so advanced why can't it be used in a better way such as finding the exact amount of a personal hearing loss and report just how a hearing aid should be made to make up that loss? It might even report as to rather an operation would correct the hearing loss.

I wore a hearing aid for 3 months but it is now in the bureau draw. Hearing tests are pretty crude compared to what this computer could do.

Now there is a humane problem and I hope to read that work is being done along those lines.

I have always liked the little story of the scientist who went ahead and did something and then learned that it was supposed to be impossible.

Sincerely yours,



Harry Glidden

[ans 1/11/60]

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TEL. MURRAY HILL 9-3250

December 30, 1959

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

Thank you so very much for your kind letter and the summary of your proposed article. I have not answered you in detail before this, because I hoped to see you in Chicago. Unfortunately it was necessary to cancel my trip to Chicago so that I was deprived of hearing your speech, which must have been very interesting according to newspaper account - and, of course, because your could not make any other kind of speech. (As most of my friends, associates - and enemies - will testify, I am not given to empty pleasantries. But I have read your books over and over, and I find every time I read them the most exciting ideas.)

I would like to write this letter very frankly, and trust that you will regard it as completely confidential. For this reason I am typing it myself, and ask you to overlook my inadequacies in the operation of a typewriter.

First of all, and I mean this sincerely, the summary of your article is very exciting. I believe wholeheartedly that this is exactly what our readers need to be told. As a matter of fact, it is because I believe so strongly that such ideas, knowledge, and information needs to be widely disseminated that I am working for a publisher. I also want you to know that our editor, Mr. Oliver, has read your summary with great interest; however, not being very much in contact with the world of Cybernetics and computing machines he feels that the summary is too advanced to be understood without a great deal of background material. Mr. Oliver has been editor of ELECTRICAL MANUFACTURING for many years, and his knowledge of our readership is far greater than mine. But that is obvious. On the other hand, it is my function on the staff of this magazine to present the subject to our readership and to act as consultant to the editorial staff. This function can only be fulfilled by leading the staff and the readership gently to the fountain and showing them the exhilarating effects they might find if they can be persuaded to take a nip. Such gentleness and caution is quite foreign to my innate personality, but I know (intellectually) - although I am not ~~always~~ able to act accordingly - that it is important, vital, for success. May I digress for a moment and tell you a little about myself, in order to explain why I feel so strongly about this article and consider it so vital to make it meaningful to our unsophisticated

readership? And may I also say, that I am not, in any way, patronizing. But I do feel that in a field as rapidly expanding as this whole vast area that is the foundation of the 2nd industrial revolution there is always the danger that those who are not (at least not yet) directly and actively involved are so completely outside that it is difficult for any "insider" - even one on the periphery, as I am - to realize that the uninitiated know nothing, or worse than nothing, they have been blinded by dense blocks of nonsensical misinformation. And this is an age characterized by ~~an~~ fast communication, so that misinformation, no matter how nonsensical, is spread so fast and so widely, that it is absorbed without any filtering by people's common-sense. Add to this the semantic problems, the creation of a terminology that makes real communication difficult even among scientists, let alone between scientists and laymen.

Without taking your time with too much detail about my own background and experience, I would like to mention briefly how I arrived at my present position. I did all my undergraduate work at Oxford without giving much thought to engineering, electronics, cybernetics, and only a little to mathematics. But I did know since I was 8 years old exactly what I wanted to do. I wanted to write. Later on, of course, it occurred to me that "writing" is simply a method, and that the important thing one needs to know is what one wants to write. I found a great many subjects I wanted to write about. Above all writing - it seems to me - must have the object of communicating something to the reader which stimulated him emotionally, intellectually, or preferably in both ways. I was very interested (and most unsuccessful) in politics and the social sciences. I was active and I wrote and spoke a great deal, but I doubt whether I ever communicated very much. Now I think that the reason I was so unsuccessful was that I assumed that people listened to me, or read what I wrote because they wanted to have their opinions changed. I submitted liberal opinions to the editors of conservative magazines, and found it a dreadful shock that the editors of the Saturday Evening Post printed the same nonsensical and obsolete material not because they don't know there is another side, but because they don't want to know, nor do they want to disseminate any such knowledge.

I think that the besetting sin of this age is indifference together with its spouse inertia. And I seem to run into this unattractive pair at every turn. I had always been interested in writing fiction - once, when I was very young, I sold a short story to the Atlantic. From then on I thought that if I could just learn to write well, I could have my work published, and communicate in articles as well as fiction. I am a very prolific writer - but not much got into print. In fact, I soon found out (by writing a tongue-in-cheek parody on one of the Women's magazine shortstories and selling it for a good price) that nobody wanted to publish what I wanted to say, but that I had no trouble getting what I considered real drivel published. I am ashamed to admit I have done a good bit of that - sometimes because I rationalized that one could disguise something good in a lot of drivel, and usually because I had to earn a living. I wrote every imaginable type of story, and dreadful television scripts. Only very rarely could I get anything into print or onto a screen that did not make me vince when I saw it.

Freelance writing, even before I could not stand the garbage any longer, is a precarious way to earn a living for oneself and

and a young child, and after my divorce I did not want to depend on it for more than the gravy, and I earned my living by writing public relations releases. To cut a long story short, I found myself handling the account of an electronics firm (excuse the jargon) and became fascinated. I started to take courses, finally worked for a degree in Electrical Engineering, took some graduate mathematics, and have been working with computers ever since. I had all sorts of jobs working with digital computers, as an engineer, systems analyst, but I was primarily interested in writing about this fascinating field. I seemed so obvious to me that we are on the threshold of a new era with tremendous potential for unheard-of standards of living (I don't mean this from the gadget-point-of-view) but also the danger of abject degradation. When I first read your books I was elated to find that so eminent a scientist saw so clearly what I had only perceived vaguely. I am afraid I quoted you incessantly.

For several years I have made every effort to communicate what seems to me the most important aspects of the new scientific and technological developments. I cannot think of anything more important than to do everything I can do to increase the awareness and interest in phenomena that are already in such evidence and that must surely - for good or evil - completely embroil every human being in the near future. But the lack of interest is staggering. I have spoken at the most heterogeneous array of organizations, I have introduced the material in adult education courses, I had a small (and quite ignominious) part in Ed Morrow's widely publicized television show, which was tagged the the unfortunate title: "Automation -Weal or Woe", or something equally inane. I have written - reams and reams (and published only the most pedestrian or purely technical material). I have tried to interest labor leaders, businessmen, housewives, students, teenagers, and - above all - engineers. The indifference of engineers I have found most disappointing. Year after year I attend numerous conferences in the hope of hearing a single paper on the most vital subject, or interesting a single person. This morning I received a letter from Bernard Benson (of Benson-Lehner), who is one of the very few in the field who shares my interest and concern, describing the same staggering lack of interest. He makes the discouragingly true statement: "If you were to evaluate 10,000 papers given by scientists (concerned directly with computing machines), it would be very interesting to see how many were concerned with this subject. ~~My guess~~ I am guessing that it would be less than 10."

To sum up the reaction I have observed: (1) a shrug of indifference (particularly from engineers and scientists in the field), (2) complete bafflement and disbelief, (3) fear - of the vague and helpless sort, and similar responses (if one can call these responses). What I have rarely found (and I am happy to say that my husband, a layman as far as engineering and computing machines are concerned, is one of the rare exceptions) is a sense of responsibility, the understanding that it is his (or her) concern what sort of world we are creating. You say in your Introduction to Cybernetics that labor unions are "totally unprepared to enter into the larger political, technical, sociological, and economic questions which concern the very existence of labor." That was written by you in 1947. And in 1959 this is (unfortunately, as I am sure you will agree) still true. My experience has been so similar a decade after you wrote those words. I found Reuther interested - I have a file of material he sent me, concerned with Automation and Labor - but I see no evidence that the unions are

doing anything to help their membership understand these phenomena.

I have just re-read your Introduction to Cybernetics written in 1947, and I am wondering how you feel about the "very slight hope" you had then. Has your hope been rewarded, and do you feel more confident now? Your speech at the AAAS in Chicago (from the garbled version in the New York papers) seems to indicate that you have - at least - not given up all hope completely yet. For myself, I must admit that I am considerably less optimistic than I was in 1947. At that time - and for many years afterwards - I had unshakeable (so I thought then) faith in the educability of human beings. I thought that all human beings are basically reasonable, though often misguided and ignorant, and that - if only they all had the physical strength and the leisure to learn - they would eagerly acquire all the knowledge they could find.

At this time, I am still clinging tenaciously to my faith in human beings, and whereas I reluctantly admit that those whose "opinions" are molded by the National Association of Manufacturers and the Saturday Evening Post are probably unwilling and unable to learn anything at all, (Erewhon, The Brave New World, and 1984 seem uncomfortably close) I do believe some can be interested and stimulated to think and realize their responsibilities. When I was offered an associate editorship on ELECTRICAL MANUFACTURING I was offered a similar job on another (similar) technical journal. The reason I accepted the offer of ELECTRICAL MANUFACTURING with much hope and enthusiasm is the person of our publisher, Louis Perrottet. He is not an engineer, he has no technical training at all, but he is interested in publishing not a glorified advertising catalogue but a magazine that is interested in important issues, that is concerned with scientific principles and education, not merely with an editorial interspersing of newsitems or "quick how-to" write-ups, that are really nothing but free space to advertisers, among the advertisements. I have no illusions about the perfection of our Basic Science and Engineering Series, but I do know the publisher's sincere desire to make it meaningful. He offered me the Associate Editorship (I understand, I am the only woman in such a position in this field) because I told him at our first meeting that my primary interest was in the communication of knowledge and ideas. And I know that the publisher is completely sympathetic to my endeavors to obtain the best possible articles, by the best possible authors. I believe in reaching for the stars - and asking you to contribute an article to ELECTRICAL MANUFACTURING was one of my first (and still foremost) actions on the staff.

Now, I must admit that the editorial staff (with exceptions) is having some difficulty in comprehending your work. I know, that I can speak freely to you, and I can therefore tell you, what I would not otherwise discuss outside my office. When I joined the staff, there was not one of your books (nor any other books on computing machines, Cybernetics, Automation, etc.) on the shelves of the editorial staff. It is quite true that this magazine started some time ago when electrical manufacturing meant power-driven machinery. It is also true, that most successful enterprises tend to stick to what they have been successful with in the past. I was appointed associate editor to "introduce" these new ideas to our readers and to the staff. I have since my first day on the staff been busily buying books, I have distributed The Human Use of Human Beings among

the editors. The editors are a heterogeneous group - being ashamed of having already taken so much of your time (if you have been kind and patient enough to read this far) I won't go into this subject in great detail - and their reactions have been better than my experience has led me to believe, and less thoughtful and interested than I had hoped.

The reaction to your promise to write for us at all, has been greeted with general enthusiasm, and we are completely united in wanting very much to publish your article. However, it is the opinion of the editor-in-chief - and I must reluctantly admit that he is probably right and much more in tune with the readership than I am - that the treatment and subjectmatter proposed by your outline is too advanced and sophisticated. Our editor sometimes underestimates the reader's knowledge of computers, and feels that they should not be expected to know anything about this subject but what we have told them in the pages of ELECTRICAL MANUFACTURING. I happen to think, that our readers might be expected to have other sources of information as well. Be that as it may, ELECTRICAL MANUFACTURING has done very little to prepare the reader for an article such as you propose, and nothing above the level of Ira Ritow's article "Control-System Representation" published in our December 1959 issue. The editor, in particular, is concerned about terminology, and feels that it would be best to start an article such as yours with material the reader is reasonably familiar with. He is inclined to believe that by using terms (and concepts) like "control" and "research and development" the reader is apt to feel on secure ground and will continue to read an article which will lead him gently towards the new and unfamiliar.

My own feelings are ambivalent. I don't like the idea that a reader has to be "guided" towards reading with fascination an article written by the leading scientists in the world about so vital a subject. And yet, I have seen so much evidence of lethargy, lack of interest, and fear of intellectual exertion that I cannot take a convincingly strong stand. It is my belief that an article from you starting with - what is to you - "old" material and ending with what you propose in your summary would serve our readers best. More than that - it would possibly make many readers really understand the problem.

Mr. Oliver - and I - sincerely appreciate your wish to give us new and fresh material. And we want it very much! As a matter of fact, to be quite truthful (and it has taken me almost five pages to get up the nerve to say that) we want both. I have discussed this matter with Mr. Oliver and Mr. Perrottet (the publisher) and it was decided that we would publish whatever you wish to write, and that I am to discuss this matter with you and reach a decision with you.

Having given this matter a great deal of thought, I have come to the conclusion that I would like to suggest two alternative ways to handle this. The first suggestion would be for you to write an article on Cybernetics, the first part of which would contain basic principles, and very simple explanations without reducing the mathematical level below that expected of the reader of Cybernetics. This would be my first choice. An alternative

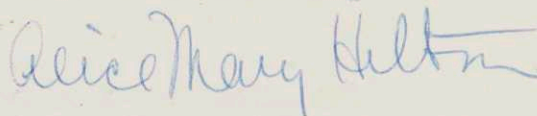
suggestion is made reluctantly, and because I can fully understand that you, Professor Wiener, are too busy to rewrite what is to you old - to most of our readers, however, brandnew - material. If you do not wish to write the entire article, I would be pleased to write part of it, namely that part that would be essentially based upon your previously published work. In this case, I would ask you to write approximately 5,000 words in accordance with your summary, and read the part of the article I am to prepare to check it for technical accuracy. I shall, within the next few days, send you a brief outline of the subject area I would like to cover with the request that you comment on this plan, and make any suggestions for further source material you might wish to make.

I should be pleased to come to Cambridge to discuss with you - at your convenience - a draft, as soon as I have time to prepare one.

Since my workload is quite overwhelming - and can hardly be expected to diminish in the next few months - I could not undertake this work during my regular workhours, but I would gladly undertake it as an evening and weekend project. I am sure we would not have any difficulty in coming to a fair financial arrangement within the fee-level agreed to by the publisher for this entire article.

By the time this letter reaches you, 1960 will have started. Thus my wishes for a happy new year will be late - but most sincere.

Yours very sincerely,



Alice Mary Hilton
Associate Editor

[and 1/7/60]

Dec. 30, 1959

PROFESSOR NORBERT WIENER

MASSACHUSETTS INST. OF TECH.

CAMBRIDGE MASS.

DEAR SIR:

I JUST FINISHED READING ONE OF YOUR BOOKS, "I AM A MATHEMATICIAN." I THANK YOU FROM THE BOTTOM OF MY HEART FOR WRITING THIS BOOK. IT IS UNDOUBTEDLY THE MOST INSPIRING PIECE OF LITERATURE I HAVE EVER COME ACROSS. I ONLY WISH THAT EVERYONE ENTERING UPON A SCIENTIFIC CAREER WOULD READ THIS BOOK AND MAKE YOUR VALUES AND IDEALS HIS OWN. FOR YEARS I HAVE BEEN UNSUCCESSFULLY LOOKING FOR A MAN WHO WOULD DESERVE TO BE CALLED A SCIENTIST. IN YOU I HAVE FOUND ONE.

VERY RESPECTFULLY YOURS,

Cyrus B. Mehr

(Student at Purdue University)

D. STANLEY-JONES, F.R.C.S.

Buckshead,
Townshend,
Hayle, Cornwall.

PHONE: LEEDSTOWN 223.

30th December 1959

Dear Dr. Wiener,

I am greatly pleased to hear from you again. A Preface from your pen will be the making of my book. I hope your holiday in Florida is bringing you the re-creation that we all need at times.

The enclosed cutting shows that your name has great news-value even over here.

With cordial greetings for the New Year,

Sincerely,

D. Stanley-Jones

[ans 1/20/60]

December 30, 1959

Dear Professor and Mrs. Wiener:

Greetings from the land of snow, sleet and ice! At least, that is what it turned out to be after the first real storm of the season hit the New England region. Today, however, the sun is shining and some of the snow is melting away -- things are "looking up".

I do hope that you are enjoying your stay in Florida and that besides lots of sunshine you found a little time to relax.-- Things are going along as well as possible here. Quite a bit of mail has, of course, accumulated, but nothing demands immediate attention. There are more invitations to speak at dinners, lecture at universities, etc., but by this time I have become acclimated and regard those things without anxiety. If we should not have a chance to take care of the correspondence on the 8th, I could always write a note myself to those people who have to have things planned by the 15th indicating whether you, Prof. Wiener, might consider the request or not (that is, if I know your plans).

Prof. Cerillo's note to me re the trip to Mexico has also arrived, and I shall forward the necessary information to Miss Goodwin. There is also a check from the Technology Review -- still in its envelope-- and I think I shall keep it here so it won't get lost in the mail, two items from the Medical Department which I will also keep here until you return, and, incidentally, five more letters from the girl in Montreal who insists that the value of π is not 3.14.

I thought you might like to have the greeting cards we received here and am enclosing them so you might have a cheer or two from the many friends you have.

Did your paper in Chicago find a stimulating audience? I hope all goes well with your lecture in Gainesville, too.

In closing, I wish that the remainder of your vacation may be an agreeable and enjoyable one.

E. M. R.

The Dracker Hotel and Apartments

PHONE GRANITE 3-0901

12-31-1959

My dear Dr. Wiener,

Thank you so
much for the novel.
It is really great.

I enjoyed talking
to you this summer.

I am completing
a book on universities.
Would you write a
brief introduction?

Will you be
here this summer?

[ans 1/8/60]

Cordially,
Frederick Meyer

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December 31, 1959

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

re: KYBERNETICS OF NATURAL SYSTEMS

Dear Professor Weiner,

At your secretary's request we have arranged for the following titles to be sent to you as your fee for giving us your opinion of this manuscript. We are most appreciative.

1. Biochemistry of Steroids, Mosettig
2. Biochemistry of Development, J. Brachet
3. An Outline of Developmental Physiology, Raven
4. An Introduction to the Theory of Numbers,
Vinogradov

With best wishes,

Sincerely yours,



ELAINE C. P. MILLAR
Scientific Editor

ECPM:ck