

197

CORRESPONDENCE July 21-31, 1954

N. WIENER MC 22

7/21  
JVC

DR. WIENER :

I'VE ENJOYED READING YOUR STORY  
JUST AS MUCH AS I'VE ENJOYED OUR  
AFTER DINNER CHAT.

Joseph K. Tanaka

HARVARD



UNIVERSITY

*Harvard Summer School of Arts and Sciences and of Education*

INTERNATIONAL SEMINAR

JULY 5 – AUGUST 25, 1954

*Purpose of the Seminar:* The Harvard Summer School International Seminar attempts to provide an opportunity for promising individuals from abroad to discuss the nature of present-day problems with their contemporaries in other European and Asian countries and in the United States. It particularly wishes to attract individuals whose normal activities prevent extended periods of absence from their home countries and who are therefore ineligible for existing exchange programs. The 1954 session expects to invite twenty participants from Europe and twenty from Asia.

*Stipend:* The Harvard International Seminar will assume all the expenses of its participants, including transportation to and from their homes, room, board, tuition, and an adequate weekly allowance for personal expenses. Participants will live in Harvard University dormitories. No provision for families can be made. This stipend does not cover expenses incurred in obtaining visas or in filing the application.

*Program:* The program of the Harvard Summer School International Seminar has three parts:

a. It will give its participants an opportunity to become acquainted with various aspects of American life through a program of distinguished guest speakers, from the professions, labor unions, industry, government, and other spheres, as well as through visits to industrial plants, newspapers, public institutions, and other organizations of interest to the participant.

b. A formal academic program: This will take the form of groups of approximately ten members working on cooperative projects of contemporary interest under the general supervision of a faculty member. Their subject matter will be of sufficient scope to permit each participant to treat it from the point of view of his special discipline or particular field of interest. It is expected that one group will deal primarily with political problems, another with economics and sociology, and a third with the arts, literature and philosophy. Each successful applicant, upon acceptance, will be furnished with a prospectus outlining the work which his group expects to engage in. The emphasis of these groups will be less on formal research than on utilizing the special competence of the participant through discussions and reports.

c. Each participant will be given an opportunity to speak to an American audience on some aspect of his own country at least once during his stay at Harvard.

*Qualifications:* In general, preference will be given to individuals who are already active in some field of endeavor although exceptionally qualified students may be considered. Applicants should be between the ages of 23 and 40 and have an adequate command of the English language.

*Method of Application:* All applications should reach the Harvard Summer School International Seminar, 10 Weld Hall, Cambridge 38, Massachusetts, no later than April 1. They should be accompanied by a photograph, two letters of recommendation, and a letter *in English* by the applicant outlining the reason for his interest in the Seminar and the contribution he expects to make to it. Applicants will be notified of the decision in their case during the second half of April, together with instructions regarding visa procedure and travel arrangements. Candidates must be prepared to leave for the United States by June 20th.

*Applications may be obtained from:*

7/21  
SK

7/21  
NYC

# MATHEMATIKA

A JOURNAL OF PURE AND APPLIED MATHEMATICS

EDITED BY

*H. Davenport, W. R. Dean, R. Rado, C. A. Rogers*

A new journal with the above title is being published by the Department of Mathematics, University College, London. It will contain original notes and memoirs on mathematics and its applications, including mathematical statistics. The journal will be printed for the Department by Messrs. C. F. Hodgson and Son, Ltd.

Two parts of *MATHEMATIKA* will be published each year, each part consisting of at least 64 pages. Part I will appear in June 1954 and will contain the papers listed below.

The subscription price will be 25s. (\$3.50 U.S. or Canadian) per volume of two parts, and subscriptions should be sent to :

*MATHEMATIKA*, University College, London, W.C.1, England.

Cheques and Postal Orders should be made payable to University College, London.

## CONTENTS OF PART I

- J. HADAMARD : History of Science and Psychology of Invention.
- C. L. SIEGEL : A simple proof of  $\eta(-1/\tau) = \eta(\tau)\sqrt{\tau/i}$ .
- S. CHANDRASEKHAR : The stability of viscous flow between rotating cylinders.
- H. DAVENPORT and G. L. WATSON : The minimal points of a positive definite quadratic form.
- W. R. DEAN and G. Z. HARRIS : The Green's function of an elastic plate.
- L. S. BOSANQUET : On convergence and summability factors in a sequence.
- D. H. MICHAEL : The stability of a rotating fluid.
- H. DAVENPORT : Simultaneous Diophantine Approximation.

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VR

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# POCKET BOOKS, INC.

PUBLISHERS



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July 21, 1954

Prof. Norbert Wiener  
Depart. of Mathematics, M.I.T.  
Cambridge 39, Mass.

Dear Prof. Wiener:

We hereby purchase your work EIGHT YEARS OF CYBERNETICS AND THE ELECTRON-  
for publication in English throughout the world in an issue of our publication IC BRAIN  
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shall be a full and valid discharge of our obligations and who shall act with the  
authority of the Author in all matters arising in any way out of this agreement.

The authority given under this clause may be revoked by the Author at any time on  
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POCKET BOOKS, INC.

By Freeman Lewis

Confirmed: July 31, 1954

Author: Norbert Wiener

POCKET BOOKS, INC.

July 21, 1954  
San Diego 52, Calif.

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

Dear Professor Wiener:

May I supplement my letter dated yesterday with a reference to my publication in the last issue of Metro-economica indicating the existence of a "cybernetic effect" in the equilibrium-tendency of international monetary circulation. The classical law is interpreted in terms of feedback based on information. Analog and digital computer devices are suggested, also an application of the auto-correlation function. References were made to your information theory.

I am

Thanking you for your interest in this matter,

Sincerely yours,

*Andrew G. Fikler*

( Andrew G. Fikler )  
Code 2920/f  
U.S. Navy Electronics Lab.  
San Diego 52, Calif.

[ans 7/29/54]



South Tamworth  
New Hampshire  
July 21, 1954

Mr. Shikao Ikehara  
22-1 Shimizucho, Meguroku  
Tokyo, Japan

Dear Ikehara:

This is just a note to acknowledge the receipt of your very pleasant letter of July 15. I am at present smarled up in the difficulties of quantum theory, but I am beginning to see daylight ahead and I shall send you anything I write on the subject.

I was in India last winter and shall be in India again about a year from now. We shall probably go to India by way of Europe, but have not fully decided how we shall return.

Regards to everybody.

Sincerely yours,

Norbert Wiener

NW:jc

South Tamworth  
New Hampshire  
July 21, 1954

Mr. John Leggett  
Houghton Mifflin Company  
2 Park Street  
Boston 7, Massachusetts

Dear Mr. Leggett:

Thanks for your letter of July 19. I am enclosing a self interview, and if it doesn't meet your requirements, please let me know.

Sincerely yours,

Herbert Wiener

NW:jc

### Self Interview

THE HUMAN USE OF HUMAN BEINGS was published some four years ago with the intention of making available to the non-technical public some of the philosophical and social consequences of the author's book, CYBERNETICS which was devoted to new developments in communication and control theory to the high-speed computing machine to the automatic factory and the like. Since the appearance of THE HUMAN USE OF HUMAN BEINGS, many of the possibilities there discussed have become actualities and we have had a chance to judge some of their human impacts, not merely as a matter of anticipation, but as a matter of observation. A demand has arisen for a new edition of this book for wider circulation, and Professor Wiener has used this opportunity to subject the material to a thorough, critical revision. In particular, matters which were treated in the original book as individual and too closely connected essays have now been drawn together into a more organized form. What began as a speculation concerning an anticipated future has been re-written into a comment on a very active present.

[ans 7/26/54]

South Tamworth  
New Hampshire  
July 21, 1954

Dr. Werner Nobel  
474 Main Street  
Greenfield, Massachusetts

Dear Dr. Nobel:

Please send me what material you have on the hip joint thesis. It is a subject in which I am very much interested, but I will doubt if I can be of much help. At any rate, don't be disappointed if I take some time in answering.

Sincerely yours,

Norbert Wiener

NW:jc

[ms 6/29/58]

South Tamworth  
New Hampshire  
July 21, 1954

Mr. Dennis O'Harrow  
American Society of Planning Officials  
1313 East Sixtieth Street  
Chicago 37, Illinois

Dear Mr. Harrow:

All that I wanted to say when I spoke of not wanting the responsibility of publishing this talk separately is that I think you should clear with Doubleday. The man to clear with is Jason Epstein. If you want to publish the talk, go ahead, but I hope you can do it in such a way as to spare me as much of the editing job as possible. I am willing to do a certain amount of work in editing, but not very much, as I am absolutely exhausted.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 7/30/54]



HOUGHTON MIFFLIN COMPANY

2 PARK STREET BOSTON 7

July 22, 1954.

Dr. Norbert Wiener,  
53 Cedar Road,  
Belmont, Mass.

Dear Dr. Wiener:

I take pleasure in sending you  
herewith a sample copy of our hard-bound edition  
of the revised **THE HUMAN USE OF HUMAN BEINGS**.  
Please let me know if you need any more copies.

With kindest personal regards,

Yours,

*Paul Brooks*

Paul Brooks

PB/MM

{ans 7/29/54}

South Tamworth  
New Hampshire  
July 22, 1954

Mr. Dildar Hussain  
268 Jubilee Hill  
Hyderabad-Deccan.4., India

Dear Dildar Hussain:

Many thanks for your letter of May 10 and for the photograph. I had a delightful time in Hyderabad and hope to pass through there again in about a year when I go to India with my wife.

Sincerely yours,

Norbert Wiener

NW:jc

South Tamworth  
New Hampshire  
July 22, 1954

Mr. Adam F. Levingood  
Central Y. M. C. A.  
Philadelphia, Pennsylvania

Dear Mr. Levingood:

What one can do in a science fiction story is one thing, and what one can hope to do in science in another. As far as the plan is concerned, I don't see much hope now or later for an input that doesn't go through existing sense organs or for an output that doesn't go through existing motor organs and the like. This does not mean that one can't reach into the brain electrically or read it electrically through encephalograms, but it does mean that these forced entries are highly non-specific in character and likely to remain so.

The real thing that seems unlikely about a story like this is that a forced intervention of the nervous system will almost certainly enter it in so gross a manner that there will be no effective coupling with the really important mental and psychic process. I don't see any way to make the story plausible in a true scientific sense, although plausibility scarcely seems to matter in modern science fiction. I don't say that you must give up your story, but simply that it is best to recognize quite baldly that it belongs to the field of fantasy rather than to anything that is even on the distant margin of present possibilities.

Sincerely yours,

Norbert Wiener

NW:jc



South Tamworth  
New Hampshire  
July 22, 1954

Mr. J. Howard McMillen  
Program Director for Physics  
National Science Foundation  
Washington 25, D. C.

Dear Mr. McMillen:

Yevick's paper is something that I cannot rate on a casual inspection. It is clear that we actually do linearize many non-linear situations in some statistical way at least to the first approximation. I am quite convinced that the supposed linearity of quantum theory has a foundation of just this nature. On the other hand, the sort of reasoning required is very ticklish and I would have to make an extremely careful study of Yevick's work to know that he has done it in a satisfactory manner. I know Yevick personally and have a high opinion of him and think it quite possible that he has got his hands in something good, but the paper will need careful study. Actually, I am prepared to devote a good deal of attention to the paper if you give me time, but I can't do it as a rush order. If it really is closed up, it may well be first rate, but I know by sad experience in the field how easy it is to miss the boat. Please let me know whether to return the paper at once or to hold it for further consideration.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 7/29/54]

F. LE LIONNAIS  
24 rue du Champ de Mars  
Paris VIIème  
France

Le 23 Juillet 1954.

Professor Norbert WIENER  
M.I.T.  
Cambridge 39,  
Massachusetts,  
U.S.A.

Cher Monsieur Wiener,

Peut-être avez-vous conservé en mémoire notre dernière rencontre et la conversation que nous avons eue - avec un petit groupe de vos administrateurs - au café Procope, à l'occasion de votre dernier passage à Paris avant de prendre l'avion pour les Indes. De vos souvenirs d'enfance aux problèmes des usines automatiques, de la structure du japonais à la généralisation du Théorème de Tauber et des températures intra-cellulaires à la conception du diable par Saint-Augustin, notre discussion n'a pas manqué de variété. Depuis cette date, j'ai souvent évoqué cette rencontre avec mes amis et en particulier avec ceux qui, comme moi, font partie de notre petite Association Française de Cybernétique.

J'espère que vos nombreux déplacements à travers le monde et vos travaux ne vous ont pas trop fatigué, et que votre santé est bonne. J'ai eu d'ailleurs de vos bonnes nouvelles récemment, par une lettre que m'a envoyée mon ami M. Robert Vallée, après un séjour d'une semaine qu'il a fait en Juin dans le New Hampshire. C'est également par M. Vallée que je suis au courant de l'achèvement et de la prochaine parution de votre ouvrage "The Philosophy of Invention".

Sachant combien vous devez éviter toute nouvelle fatigue, je ne voudrais pas prendre la responsabilité de vous demander d'accepter d'entreprendre un travail. Toutefois, je serais heureux de vous associer à une entreprise dont je m'occupe, parce que cela pourrait se faire sous une forme qui n'entraîne pas un réel effort de votre part.

Voici de dont il s'agit. Je viens d'accepter de m'occuper de préparer  $\Theta$  pour la revue française "TRAVAIL ET METHODES" - un ouvrage collectif sur "LA METHODE DANS LES SCIENCES MODERNES". J'aimerais infiniment pouvoir inscrire votre nom au fronton de cette oeuvre; mais ce ne serait pas nécessairement sous la forme d'un article, il serait suffisant que vous nous fassiez bénéficier de votre génie par l'intermédiaire d'une interview approuvée par vous.

Je n'ai, jusqu'ici, fait part de ce projet qu'à un petit nombre de personnalités, mais d'ores et déjà, je suis assuré du concours de MM. Louis ARMAND, Pierre AUGER, Gaston BERGER, Louis de BROGLIE, Albert CAQUOT, Georges DARMOIS, Karl von FRISCH, Henri LONGCHAMBON, Louis LONGCHAMBON, René POIRIER, Charles SADRON, Jean ULLMO, Fritz ZWICKY.

C'est maintenant seulement que je commence des démarches systématiques en vue de rassembler les collaborateurs de cet ouvrage. Est-il besoin de vous dire que je ne m'adresserai qu'à des personnalités de premier plan, et que j'espère contribuer ainsi à la mise au point d'une oeuvre qui fera honneur à notre époque.

Est-il nécessaire que je vous dise combien le public français - qui admire infiniment vos idées et est très avide de connaître toutes vos thèses - serait heureux de voir figurer votre nom au sommaire de cette oeuvre.

1 pièce jointe.

.....

Si vous pensiez que la rédaction d'un article entraînerait pour vous un travail trop fatigant, accepteriez-vous que M. Robert Vallée profite de son séjour au M.I.T. pour vous interviewer ~~à domicile~~, noter vos opinions, vos thèses et vos réponses, dans une conversation très libre dont il soumettrait le texte à votre approbation avant de nous l'envoyer ? Ce serait une grande chance pour le public scientifique français, si vous acceptiez soit la formule de l'article, soit la formule de l'interview par M. Vallée.

Ci-joint veuillez bien trouver un plan de l'ouvrage que j'envisage. Il vous précisera les buts que nous visons.

Comme vous le verrez, ce texte est beaucoup plus détaillé qu'une simple Table des Matières. En fait - et quoique je ne sois pas limité du point de vue du nombre des articles - je n'ai pas l'intention de rechercher un auteur pour chacun des points de ce plan. Il suffira que quelques-unes des idées-force soient développées dans chacune des 5 grandes sections de ce projet, pour que nous obtenions un ouvrage valable. Certains des points indiqués pourront donc être regroupés en un seul article, d'autres pourront être abandonnés ou traités allusivement; enfin, bien entendu, chacun des auteurs sollicités pourra me suggérer le choix d'un autre sujet, si celui-ci reste conforme à l'esprit général de l'ouvrage.

La longueur des articles n'est pas fixée impérativement; elle sera fonction de la nature des sujets traités. Dans la majorité des cas, elle pourra être de 5 à 10 pages dactylographiées, (soit 2 000 à 5 000 mots). Mais, encore une fois, les textes pourront - si leurs auteurs en expriment le désir, et s'ils ne s'écartent pas du thème général - être plus longs ou plus courts.

Mon intention est de rassembler tous les textes d'ici 8 à 10 mois, afin de donner à leurs auteurs le temps de faire une oeuvre valable. J'aimerais pouvoir remettre tous les manuscrits à l'impression vers les mois de Mai ou Juin 1955, de manière à sortir l'ouvrage de presse au début de l'automne.

Je serai heureux de connaître toutes les remarques et suggestions que ce projet peut vous inspirer. Une prompte réponse me permettrait de vous réserver le sujet que vous auriez choisi et la formule (article ou interview) que vous préférez. De mon côté, je reste à votre entière disposition pour vous donner tous les renseignements que vous pourriez désirer.

Dans l'espoir d'une réponse favorable, voulez-vous me croire, cher Monsieur Wiener, bien amicalement vôtre.

F. Le Lionnais

F. LE LIONNAIS

Chef adjoint de la Division d'Enseignement  
et Diffusion des Sciences de l'Unesco,  
Président de l'Association des Ecrivains  
Scientifiques de France.

P.S. J'envoie une copie de cette lettre  
à M. Vallée, en lui demandant de  
prendre contact avec vous sur cette  
question.

[ms 8/29/54]

LA METHODE DANS LES SCIENCES MODERNES.<sup>(1)</sup>A) INTRODUCTIONB) POSITION DU PROBLEMEI. Situation de la Science.

- a) La place de la Science dans l'activité humaine,
- b) Théorie et Pratique. Sciences Pures et Sciences Appliquées.
- c) Sciences, Techniques, Industries, Economie, Structures sociales.

II. Nature et Structure de la Science en tant qu'elles constituent des approches du problème de la méthode.

- a) La Science ou les Sciences ?
- b) Qu'est-ce que l'esprit scientifique ?  
Subjectivité et objectivité dans les jugements.
- c) Qu'est-ce que la Réalité ? Qu'est-ce qu'un Fait ? Les notions de Relation et de loi. Qu'est-ce qu'une explication ?
- d) Les grands Principes: Déterminisme et Causalité. Symétrie et Dissymétrie. Invariance. Le cadre spatio-temporel. (A compléter, si nécessaire.)

III. Les grandes étapes de la conquête de la méthode scientifique.IV. La méthode scientifique dans son contexte humain.C) LES CLEFSI. Les moteurs intellectuels.

## a) La folle du logis.

1. Curiosité et goût du jeu. Les rôles de l'imagination et de l'intuition.
2. Richesses et périls de l'analogie: Des ressemblances trompeuses aux modèles véritables. La détection des structures isomorphes.
3. Les fausses sciences devant la méthode scientifique. (Ne pas oublier que leur chiffre d'affaires est très supérieur aux budgets de recherche.)
4. L'Hypothèse. Le Principe de l'économie des hypothèses.

## b) Le raisonnement.

1. Induction, Déduction, Analyse, Synthèse au XXème siècle.

(1) Ce titre est provisoire. De même tous ceux des articles ci-dessous. Ce sont des indications de sujets, permettant de se faire une idée du découpage. Mais, bien entendu, les titres seront la création des auteurs des articles.

(1) LA MÉTHODE DANS LES SCIENCES MODERNES

2. Observation, Enregistrement des Faits.

Reste-t-il des chances de découvertes dans l'observation des phénomènes courants ?

De la différence radicale qui sépare l'observation naïve (généralement invoquée dans les fausses sciences ou dans les découvertes ou les inventions puériles) de l'observation scientifique.

3. Expérience, Vérification.

Expériences cruciales (réellement cruciales et pseudo-cruciales.)

4. Les déséquilibres dans les rapports de l'analyse et de la synthèse: l'esprit de système.

c) Les problèmes et les points de vue.

1. Les Problèmes: la Science n'est pas seulement l'art de résoudre les problèmes, mais aussi celui de les poser.

Les problèmes rebelles comme stimulants de progrès dans la méthode.

Les méthodes "sur mesure".

Les pseudo-problèmes.

2. Point de vue local et point de vue global.

3. Point de vue structural et point de vue fonctionnel.

II. Les auxiliaires techniques.

a) L'équipement matériel de la Science (et son incidence sur les méthodes.)

b) La mesure (Et: la précision dans la mesure.)

c) Problèmes de documentation (notamment: la documentation électronique.)

d) Problèmes de vocabulaire et de traductions.

III. Hasard et Méthode.

D) LE CLIMAT (psychologique et social)

I. Problèmes de coordination.

a) La recherche et la création scientifique artisanales ont-elles un avenir ?

(Les vocations individuelles: introvertis et extrovertis)

(Les exigences sociales: le prix de l'équipement, etc.)

b) Le travail en équipe (Ses nombreuses variantes: l'équipe sous les ordres d'un chef plus ou moins absolu; l'équipe en osmose d'idées avec son chef; l'équipe avec un coordinateur; l'équipe "démocratique", etc.)

c) Peut-on et doit-on diriger et planifier le travail scientifique ?

(1) Peut-on ? - (2) Doit-on ? - (3) Si oui, comment ?

II. La politique de la Science.

a) Le financement de la Science (et le prix de la méthode scientifique.)

b) Invention ou Organisation ? (Faut-il organiser le connu ou viser à son remplacement par de l'inédit ?)

III. Autres aspects du problème du climat social.

Les incidences de l'internationalisation des Sciences sur la méthode scientifique.

E) LES METHODES PARTICULIERES

I. Sciences Mathématiques.

- a) Vers l'abstrait: l'axiomatisation et la généralisation.
- b) Vers le concret: la pénétration des sciences par les mathématiques.
- c) Les points de vue vectoriel, matriciel, tensoriel, opératoirel.
- d) La statistique comme méthode générale et la théorie de l'échantillonnage.

II. Sciences Physiques et Chimiques.

- a) Objets, Substances, Etats, Phénomènes. (Et: la notion de champ comme méthode d'explication.)
- b) Equations aux dimensions et Homogénéité.
- c) La dilatation des échelles et les problèmes de la (macro et micro) représentation.
- d) L'interaction de l'observateur et de l'observé en physique quantique et son incidence sur les méthodes de mesure.

III. Sciences Biologiques.

- a) L'observation en biologie descriptive (Zoologie, Botanique, etc.) et les enseignements que les autres sciences pourraient en tirer.
- b) Les problèmes de classification. Classifications scolastiques et classifications efficaces.
- c) L'application aux phénomènes biologiques complexes, fragiles et labiles, des méthodes propres aux sciences physiques.
- d) L'étude avec destruction et l'étude non destructive.

IV. Sciences Humaines.

- a) L'étude par les hommes des phénomènes humains. (Et: Mérites et abus de la méthode des interrogations massives.)
- b) (un article représentant un apport de l'Economie politique.)
- c) L'analyse et la critique des sources en Histoire.
- d) (Un article représentant un apport de l'Organisation du Travail.)

F) L'APPORT MODERNE (1)

I. Le mythe des Sciences nouvelles.

II. Y a-t-il une nouvelle méthode scientifique ?

- a) Y a-t-il une nouvelle logique ?
- b) Carrefours, chemins de traverses, anastomoses.  
La méthode des greffes de méthode (en liaison avec B) 1, b) et avec E).
- c) L'Opérationnalisme (de Bridgman.)
- d) La Recherche Opérationnelle.

---

(1) Peut-être conviendra-t-il de supprimer cette section et d'en reclasser les éléments dans les sections précédentes.

III. La Science de la Méthode scientifique, chapitre de la Science de la Science.

L'"espace des théories". Y a-t-il un "espace des méthodes" ? une topologie des méthodes ? une algèbre des méthodes ? etc....

G) CONCLUSIONS

(Article de synthèse.)

II. Sciences Physiques et Chimiques.

- a) Objets, Substances, États, Phénomènes. (RT: la notion de champ comme méthode d'explication.)
- b) Équations aux dimensions et homogénéité.
- c) la dilution des échelles et les problèmes de la (macro et micro) représentation.
- d) L'interaction de l'observateur et de l'observé en physique quantique et son influence sur les méthodes de mesure.

III. Sciences Biologiques.

- a) L'observation en biologie descriptive (écologie, botanique, etc.) et les enseignements que les autres sciences pourraient en tirer.
- b) Les problèmes de classification. Classification zoologiques et classifications végétales.
- c) L'application aux phénomènes biologiques complexes, fragiles et labiles, des méthodes propres aux sciences physiques.
- d) L'étude avec destruction et l'étude non destructive.

IV. Sciences Humaines.

- a) L'étude par les hommes des phénomènes humains. (RT: Méthodes et sens de la méthode des interrogations massives.)
- b) (un article représentant un aspect de l'économie politique.)
- c) L'analyse et la critique des sources en histoire.
- d) (un article représentant un aspect de l'organisation du travail.)

F) L'APPORT MODERNE

I. Le rythme des Sciences nouvelles.

II. Y a-t-il une nouvelle méthode scientifique ?

- a) Y a-t-il une nouvelle logique ?
- b) Cartesours, chaînes de traverses, arborescences. La méthode des grilles de méthode (en liaison avec B, I, d) et avec E.)
- c) L'opérationalisme (de Bridgman).
- d) La Recherche Opérationnelle.

(1) Pour être convaincus il se rapportent cette section et d'en recenser les éléments dans les sections précédentes.

South Tamworth  
New Hampshire  
July 23, 1954

Mr. Franklin Watts  
The Pocket Magazine  
699 Madison Avenue  
New York 21, New York

My dear Mr. Watts:

I have corrected my manuscript to the best of my ability, writing the passages to be inserted consecutively and indicating on the text where they are to be inserted, as well as at the beginning of each insert. I trust that this work of correction will meet your requirements.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 7/27/54]



Tel-Aviv, 25-7-54.

Leopold Goetz  
36, Khovevei Zion Str.,  
Tel-Aviv, Israel.

Prof. Norbert Wiener, Esq.,  
Massachusetts Institute of Technology,  
Mass., U.S.A.

Dear Sir:

The idea of a contingent universe expressed in the preface to your book "The Human Use of Human Beings", confirms, to my joy and satisfaction, the basic theses on which I have been working for many years. Two of my books were published in Hebrew: "Law and Chance" and "Creative Cumulation".

I have taken the liberty to mailing you a copy of my book "Die Entstehung der Ordnung", published recently in German language, hoping that you read German and will find time to read it.

The circle of philosophers and scholars, who I have contact with, is mostly neokantian and strictly determinative, so that I am feeling rather solitary with my ideas. My lectures are one-way communications. I base my explanations largely on the theories of probability of von Mises's and Reichenbach. I was in correspondence with Reichenbach until shortly before his regrettable decease.

The devil, in which I believe, is augustinian according to your perception. I owe you the information about Gibbs, Borel and Lebesgue and beg you to be good enough to let me have literature data and addresses of these authors.

Thank you in advance for your kindness,

Yours sincerely

Leopold Goetz.



[ms 8/4/54]

Maria Zwinz-Breyer

Wien, den 25. Juli 1954  
XIII., Elßlergasse 10

Herrn  
Professor Norbert Wiener  
Masachusetts Institute of Technology  
Department of Mathematic  
C a m b r i d g e 38. Mass.

Sehr geehrter Herr Professor!

Vielen Dank für Ihr freundliches Schreiben vom 23.VI. als Antwort auf die Zusendung meines Appells an die Vereinten Nationen betreffend eine Deklaration der Menschenpflichten. Es bereitet mir eine große Genugtuung, daß Sie mit dem Inhalt sympathisieren, wie ich es nicht anders nach der Lektüre Ihres HUMAN USE OF HUMAN BEINGS erwartet habe.

Daß Sie von leisen Zweifeln bgl. der speziellen Anwendung von Massen-Appellen durch die Vereinten Nationen erfüllt sind, wundert mich nicht, teile ich sie doch mit Ihnen. Nur - an wen hätte ich mich wenden können, da ich eine Massenbewegung nur durch eine große Organisation ermöglicht sehe und sie für notwendig erachte, weil eine solche Bewegung in die Masse dringen und Dynamik bekommen muß, soll sie Breite und Schlagkraft erhalten.

Wohl bin ich auch Ihrer Ansicht, daß die Stärke der Individualität in der Masse verloren geht, und da man diese keinesfalls missen kann, habe ich mich eben an Einzelpersonlichkeiten gleich Ihnen gewendet, um diese mit meiner Idee bekanntzumachen; denn da weiß ich, daß sie wertvollen Niederschlag finden wird und so eine Avantgarde zustande kommt.

Ich bin schon sehr begierig, Ihr bereits fertig gestelltes neuestes Werk, in dem Sie gegen die gegenwärtige negative Einstellung den Idealen gegenüber Stellung nehmen, kennenzulernen. Ich danke Ihnen bereits im Voraus bestens für die Zusendung desselben, so wie es erscheint; es wird gewiß befruchtend auf mich wirken und meinem Wünschen und Wollen, gegen die katastrophale Einstellung der heutigen Menschheit Sturm zu laufen, neuen Auftrieb geben.

In der angenehmen Erwartung dieses Ihres Werkes begrüße ich Sie bestens.

Ihre

*Maria Zwinz-Breyer*

P.S. Ich beherrsche das Englische nicht genügend, um einen tadello-  
sen Brief zu verfassen, und da ziehe ich vor, deutsch zu antworten;  
entschuldigen Sie dies bitte, aber eine Übersetzung durch eine an-  
dere Person gibt diese, aber nicht mich wider.

d.O.

South Tamworth  
New Hampshire  
July 26, 1954

Professor Albert Pfluger  
Buchnerstr. 7  
Zurich 6, Switzerland

Dear Professor Pfluger:

I enclose herewith the manuscript which I am offering for the Festschrift. I have reverted to the title concerning the factorization of matrices as I have not been able to put my new quantum theory results into satisfactory shape during the time allotted me. I actually have these new results, but they are still a bit bothersome as far as concerns the precise formulation.

Please pass my personal good wishes on to Professor Plancherel. He is a man whom I admire greatly, both for his contributions to mathematics and for his personality. Please pardon me too if this manuscript may arrive a day or two after the deadline. I am posting it air mail on the twenty-sixth of July.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 8/3/54]



HOUGHTON MIFFLIN COMPANY  
2 PARK STREET BOSTON 7  
TELEPHONE: CAPITOL 7-1050

July 26, 1954

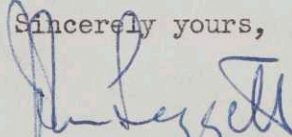
Dear Dr. Wiener:

Thank you for your prompt response to my letter about the self-interview. It is very helpful but I am afraid it's almost too straightforward for the popular consumption we have in mind. Indeed, the best possible interview for our purposes, would be an amusing one. Perhaps this idea won't appeal to you at all, but in case it does I will set down some questions which you might want to answer either in a straightforward fashion or a little facetiously.

1. Whose idea was revising THE HUMAN USE OF HUMAN BEINGS?
2. Does it disturb you that such a work has to be revised, and do you think it will have to be revised again in a similar length of time?
3. Would you think it advisable to make the next edition a loose-leaf one so that new information may be added daily as the situation changes?
4. Is it just the computing machines that have changed since the first edition? Is it possible that the human being has changed? Or your views about him?
5. What about yourself as an author? Do you feel that the intervening years have perfected your craft as a writer and organizer of scientific material for popular consumption?

I have an uneasy feeling that this all is a little impertinent. If so, I hope you will disregard this letter.

Sincerely yours,

  
John Leggett  
Publicity Director

Dr. Norbert Wiener  
South Tamworth  
New Hampshire

JL:cdr

[ans 7/29/54]

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

N. McL. SAGE  
PLACEMENT OFFICER  
EVELYN YATES  
ALUMNI PLACEMENT

DIVISION OF INDUSTRIAL COÖPERATION  
PLACEMENT BUREAU  
CAMBRIDGE 39, MASS.

July 26, 1954

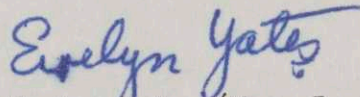
Prof. Norbert Wiener  
Room 2-155  
M. I. T.

Dear Prof. Wiener:

I am enclosing a copy of a letter and experience.

They are self-explanatory. If you have any suggestions for Mr. Baum, I am sure that he would be glad to hear from you.

Sincerely yours,



Evelyn Yates (Mrs. J. A.)

EY:PLJ  
Enclosures

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634 Montgomery Street  
Brooklyn 25, New York  
July 19, 1954

Alumni Placement Office  
Massachusetts Institute of Technology  
Cambridge, Mass.

Gentlemen:

I am a graduate of M.I.T., have recently been released from active duty with the Air Force, and am presently looking for a position as an Electronics Engineer.

I am especially interested in doing research or development work in "Cybernetics" (possibly on "Prothesis"), fields with which Professor Wiener of M.I.T. has been associated.

Enclosed is a resume of my background.

I would be grateful if information can be supplied to me as to the employment possibilities in this field, either at M.I.T. or elsewhere.

Thanking you,

Very truly yours,

/s/ Leon Baum

LEON BAUM

PERSONAL:

Born: March 27, 1928; Single; Address: 634 Montgomery Street, Brooklyn 25, N.Y.

Draft Status: 1C (Second Lieutenant in USAF Reserve). Position Desired: Electronics Engineer

EDUCATION:

Massachusetts Institute of Technology, Cambridge, Mass., 1945 - 1949.

Bachelor of Science in Electrical Engineering, February, 1949.

Major Field: Electronics Applications.

University of Illinois, Urbana, Illinois. Completed  $1\frac{1}{2}$  years, Sept. 1949-Feb., 1951

Master of Science in Electrical Engineering, August, 1950.

Major Field: Communications.

Major Subjects: Advanced Communications Networks -  $1\frac{1}{2}$  yrs.,

Servomechanisms -  $\frac{1}{2}$  yr.,

Microwave Circuits - 1 yr.;

Electromagnetic Waves and Radiating Systems - 1 yr.

EXPERIENCE:

1951 - 1953 Naval Ordnance Laboratory, White Oak, Maryland  
Ordnance Development for Navy. Electronics Engineer  
Partially designed an antenna testing facility; designed some mechanical components; set up, modified and operated electronic equipment during missile tests at the Naval Proving Grounds, Dahlgren, Virginia.

1949 - 1949 Edo Aircraft Corporation, College Point, Long Island, New York  
Sonar Equipment Development and lifeboat manufacturer.  
Electronics Engineer  
Tested and measured equipment characteristics; wired and assembled electronic chassis; drafted wiring schematics.

MILITARY SERVICE:

Feb. 1953 - June 1954

United States Air Force. Second Lieutenant

Project Officer. Was responsible for installing and keeping special equipment in operation and production during the course of a training program. This included the initiation and running of an "On Job Training" program, keeping up a preventative maintenance program, and maintaining a spare parts inventory. Attended service school from March 1953 to September 1953.

Character of Separation: Honorable; released from Active Duty and assigned to USAF Reserve.

ORGANIZATIONS:

1945-1949: M.I.T. Nautical Association; 1949 - present: Institute of Radio Engineers;  
1949 - present: M.I.T. Alumni Association.

ALUMNI PLACEMENT BUREAU, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

South Tamworth  
New Hampshire  
July 27, 1954

Mr. Charles Romine  
C. B. S. Television  
524 West 57th Street  
New York, New York

Dear Mr. Romine:

You will pardon my intrusion in writing you this letter, but your name was suggested to me by a friend, I believe Mr. Jason Epstein, as a man who would be interested in possible material for television plays. There is a subject which I have had in view for years which seems to me admirably suited for that use, namely, the conflict in the early days of the long-distance telephone industry between Oliver Heaviside and Michael Pupin. Owing to the fact that what I have to say might still be taken amiss by the A. T. and T., it might be necessary to transpose this play into a different field of invention, but I do not believe that this transposition is impossible.

The story is this: Heaviside, who had been a telegraph engineer since the early days, developed a mathematical theory of what is called the distortionless line. Heaviside was desperately poor all his life, deaf, snuffy and combative. He was outspoken, and completely honest and incorruptible. He developed this mathematical theory of the proper way to apportion the electrical constants of the long-distance communication line against the opposition of Sir William Priest, the head of the telegraph service of the British Post Office. Priest was an amiable, expansive person, a competent administrator and a perfect ass as an engineer. Priest recommended increase of what is known as the electrostatic capacity of the line, while Heaviside showed that this change would be in exactly the wrong direction and suggested the use of electromagnetic load. Heaviside, together with his brother, who was a British Post Office engineer, bootlegged the use of one of the English telephone lines for his experiment, but the experiment was performed hastily and the



July 27, 1954

results were not conclusive. Heaviside never applied for a patent on his ideas which were developed in the late eighties, so that by 1900 his invention had been dedicated to the public and was not patentable.

About 1900 the American Telephone and Telegraph Company was founded to supplement the existing business of local telephones by long lines. The only available means open at the time were the use of the Heaviside loaded line. This, however, could not be patented and made the basis of the monopoly which the telephone company needed to protect the infant industry. The result is that the telephone company set investigators at work within the company and without to see if it would not be possible to puff up subsidiary sides of the Heaviside invention as themes for patents which, if they might not protect the original idea of the loaded line, could be so constructed as to protect important features which would have to be used in any practical realization of the latter. Two men in particular worked on it, Campbell within the company and Michael Idvorsky Pupin outside the company at Columbia University. I want to say explicitly that I have no criticism of the conduct of Campbell who made important improvements in telephone engineering. Both Campbell and Pupin achieved results in the construction of the loading coils needed, although these construction improvements were completely in the spirit of detailed instructions which Heaviside had given. Moreover, they gave a mathematical solution of the problem of how close the loading coils on a line would have to be spaced to avoid undesirable cut-off at high frequencies. Heaviside had not given this formula in so many words, but he had mentioned the spacing of coils not too different from that recommended by Pupin and Campbell and one which would have worked perfectly.

The upshot of it all was that Pupin was paid half a million dollars for his patents. Notice that it was Pupin who was paid and not Campbell, for the main purpose of this payment was to produce a confusion in the minds of judges and lawyers that this was a genuine payment for a genuinely fundamental invention and if the money had passed to a company employee, there would have been a considerable smell of skullduggery.

July 27, 1954

All of this represents the background of an extremely dramatic situation. The company wished to pay a certain sum of money to Heaviside, partly as a matter of conscience and partly, I believe, to avoid other companies getting at him to furnish a basis for subsequent litigation. Heaviside refused to take one penny unless he were recognized as the original and sole inventor of the loaded line. This the Bell Company could not do without casting to the winds the money they had paid Pupin. Thus we have the grimly sardonic picture of the corporation which was to become the greatest in the world, held up in fear and trembling by this poor little man from Camden town. Heaviside had never known anything else but poverty, and I do not think that the extra burden of not obtaining a fortune weighed very heavily on his soul.

Thus there was a little of Prometheus in Heaviside. He suffered, but he had brought down to earth his portion of heavenly fire and he knew it. On the other hand, Pupin's role became that of Dr. Faustus. Here I do not mean the sophisticated Faust of Goethe, but that far more limited Faust of Marlowe. For the rest of Pupin's life he was limited and restricted by the fact that he had accepted half a million dollars for a part in what, to say the best of it, was not a very noble deal and he was never more his own man. He wrote a book FROM IMMIGRANT TO INVENTOR, which was to become a classic of the aspiring American boyhood, and in this book he devotes a considerable space to belittling Heaviside and in trying to prove that he had invented the loaded line on the basis of certain experiences which he had as a Serbian herdsman. In these protests, it is clear, that he is arguing a case, not with the reader, but with his own conscience, and before the court of history and of eternal judgment. For to moralize there is one thing clear, namely, that when a soul is for sale there is one ultimate purchaser.

Heaviside came to occupy a position in the Pantheon of American hero worship, but they never thought much of him in the Bell Laboratories, for Campbell was greatly liked and Campbell obviously received much smaller reward for a much finer piece of work. Furthermore, in the background of Pupin's mind there resounded the bitter manly laughter of Heaviside. It is generally

Mr. Charles Romine

4.

July 27, 1954

recognized even in the Bell Company that the true successor of Heaviside was Campbell.

Much of the material which I here relate was given to me by men whose youthful crusading enthusiasm for Heaviside has since lapsed into the apologetics of the successful administrator. Much more was given me by a very interesting Swiss engineer B. H. Behrend. Behrend, who was a polished gentleman, but not too polished to participate in the skullduggery of the electrical engineering game of his day, was a friend and admirer of Heaviside. He could share in ambiguous actions, but he could not be brought to salve his conscience by calling them admirable. He persuaded Heaviside to accept an honorary membership in the American Institute of Electrical Engineers, but was only able to do so after persuading Heaviside that he, Behrend, was Heaviside's sincere friend and would be hurt by Heaviside's refusal. Heaviside had met in a similar way similar overtures from the British Institute of Electrical Engineers.

Heaviside died in 1925 as a sick old recluse in Torquay, England, who had a friendly but disapproving policeman bring him his meals every day. Pupin died some years later and was commemorated by a magnificent laboratory building at Columbia University and by the eulogies of the President of the great University.

If this material is worked up into a television play and I am sure that it can be, if not as it stands, at least with the proper transposition of its theme, the technique should be a rather movie technique, particularly as Heaviside and Pupin, as far as I know, never met. A narrator to take the part of Behrand, who knew both, would represent the proper instrument for securing what there is to be secured of the dramatic unities, but the individual scenes as reported through his eyes should alternate between England and the United States. It should be remembered that the subject of the play, while it embraces the Prometheus theme and the Faust theme, is neither of these alone but the contrast and interplay between the two.

If this suggestion of mine means any response in you, I shall be glad to be of what help I can. To some extent I am a writer, but I am not a playwright

Mr. Charles Romine

5.

July 27, 1954

nor do I have the technical competence to organize a performable play. My suggestion is that if the theme appeals to you, either you yourself or some playwright selected by you come to look me up either during the summer at North Sandwich, New Hampshire or during the academic year at the Massachusetts Institute of Technology, and that he talk over with me the possibilities of the situation.

Very sincerely yours,

Norbert Wiener

NW:jc



$$\lambda = - \frac{a_1^2 + a_2^2}{a_1^2 + a_2^2}$$

$$r = 2$$

$$\left| 1 + \frac{\xi H a_2}{a_1 + \xi H a_2} \right|^2 = \left| \frac{-\xi H a_1}{a_2 - \xi H a_1} \right|^2$$

$$1 \neq 2^2$$

# POCKET BOOKS



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PUBLISHERS

July 27, 1954

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

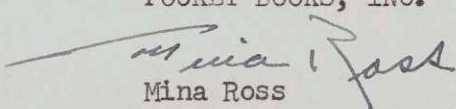
Dear Professor Wiener:

I am enclosing herewith signed contracts  
and our check for \$300.00 covering your work - EIGHT YEARS  
OF CYBERNETICS AND THE ELECTRONIC BRAIN - which will appear  
in pb The Pocket Book Magazine #2.

Please be good enough to sign one copy of  
the contract and return it to us for our files.

Sincerely,

POCKET BOOKS, INC.

  
Mina Ross

Secy to Exec. Vice President

Enc.

[ans 7/31/54]

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UNIVERSITY OF LOUISVILLE  
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ON CULTURE AND COMMUNICATION

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JOHN R. BRODERIUS  
SIDNEY D. TERR  
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AGNES G. WALTON

BETTY LOU GRAFTON,  
EXECUTIVE SECRETARY

---

CONSULTANTS  
MARGARET MEAD  
GEORGE L. TRAGER

July 28, 1954

Dear Sir:

The University of Louisville Interdisciplinary Committee on Culture and Communication takes pride in announcing its first Institute on Culture and Communication to be held on October 22 and 23, 1954 at the Brown Hotel in Louisville, Kentucky.

In the Fall of 1953, a research committee composed of an historian, a social anthropologist, a psychologist, and a linguist was formed for the purpose of a group training and research program directed toward the investigation of communication behavior. As a part of the training aspect of this program the committee decided to invite a number of scholars who have been doing special investigations in this general area to lecture to the research staff. As this program developed, it became evident that it might serve a dual purpose: that of being part of the Committee's training schedule and at the same time provide for a wider audience a general introduction to new developments in communication behavior and theory.

This enclosed announcement is an invitation to you or to interested associates to attend the Institute. We feel that it will be of special interest to psychologists, linguists, anthropologists, and other students from the humanities or the social sciences.

We are going to attempt a somewhat different format for this Institute. All of the papers to be presented will be submitted in advance to discussants. To facilitate the general purposes of the Institute, the speakers and discussants will handle the discussion. In other words, we are inviting the audience to attend rather than to participate. We hope by this to avoid the diffusion that often weakens such conferences.

*Since your thought has  
contributed so much to  
this development I hope that  
you or some of your people  
will be able to come -  
Ray Birdwhistell*

Yours sincerely,

*Ray Birdwhistell*

Ray L. Birdwhistell

[ans 8/4/54]



UNIVERSITY OF LOUISVILLE  
INTERDISCIPLINARY COMMITTEE  
ON  
CULTURE AND COMMUNICATION

Presents



INSTITUTE  
ON  
CULTURE AND COMMUNICATION

Brown Hotel  
Louisville, Kentucky  
October 22 and 23, 1954

UNIVERSITY OF LOUISVILLE INSTITUTE

ON

CULTURE AND COMMUNICATION

OCTOBER 22, 23

**INSTITUTE PROGRAM**

Friday, Oct. 22—Brown Hotel Roof Garden

General Topic: Communication Behavior Research

9:30 A.M. Chairman: Dr. Henry Lee Smith,  
Chief, Language Training Branch,  
Foreign Service Institute,  
Department of State

“Developments in Descriptive Linguistics”,  
Dr. George Trager, Visiting Professor,  
Georgetown University Institute of Languages  
and Linguistics.

“Developments in Descriptive Kinesics” Dr.  
Ray Lee Birdwhistell, Coordinator, University  
of Louisville Interdisciplinary Committee  
on Culture and Communication.

Discussion by Participants

12:15 P.M. Luncheon, Brown Hotel.

Speaker: Dr. Henry Lee Smith  
"Language and Culture"

2:00 P.M. Chairman and Speaker

Lawrence K. Frank, Author and Consultant on Problems of Culture, Growth, and Personality.

"Tactilism and Communication"

General discussion by Participants of Friday theme.

8:30 P.M. "Communication and Ethics"

Dr. Lyman Bryson (invited)  
Discussion by Participants

Saturday, Oct. 23—Brown Hotel Roof Garden

General Topic: "Communication Structuring and Society"

9:30 A.M. Chairman: Dr. John Broderius,  
Chairman, Dept. of Modern Languages,  
University of Louisville

"Some Conceptual and Value Implications of American Spoken Language", Dr. Dorothy Lee, Director of Graduate Studies, Merrill-Palmer School.

“Semantics and the Analysis of Thought  
Structure”

Prof. S. I. Hayakawa, University of Chi-  
cago

Discussion—Institute Participants

1:30 P.M. Brown Hotel

Chairman: Dr. Ray Birdwhistell

“Social Relations and Conversations” Prof.  
Reuel Denney, University of Chicago

“Communication and Culture”, Dr. Mar-  
garet Mead, American Museum of Natur-  
al History

Discussion—Institute Participants

*Please return registration to:*

DIVISION OF ADULT EDUCATION  
UNIVERSITY OF LOUISVILLE

Make registration for Institute on Culture and  
Communication October 22 and 23, 1954.

Name \_\_\_\_\_

Address \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Enrollment fee of \$5.00 per person should be  
sent with this registration. Make checks payable  
to University of Louisville.

Any additional information can be obtained by  
calling the Division of Adult Education office,  
CAhoun 2531, Extension 214 or 215.

In order to extend the educational advantages of the Institute, a special \$2.00 registration fee for students has been established. This fee does not include the Institute luncheon.

July 28, 1954

Mr. Edward A. Bryan  
Foreign Student Summer Project  
Walker Memorial

Dear Mr. Bryan:

I have your letter to Professor Wiener asking for the return of part of Robert Vallee's application.

Professor Wiener's secretary is not here this summer and Professor Wiener is in New Hampshire. I have been unable to find these papers in his files. If his secretary comes in at any time during the summer I will ask her for them and send them to you then.

Very sincerely yours,

Ruth S. Goodwin  
Secretary  
Mathematics Headquarters

July 28, 1954

Mr. John V.L. Hogan  
Hogan Laboratories, Inc.  
155 Perry Street  
New York 14, N.Y.

Dear Mr. Hogan:

Professor Wiener, who is in New Hampshire for the summer, has sent me your letter of July 14 so that I might send you the information you request about the title and publisher of the anthology in which "The Brain" was included and the date of the "Broom Closet".

I am the department headquarters secretary and am not too familiar with Professor Wiener's files since he has his own secretary during the academic year. Unfortunately, the only information I have been able to find is that the "Broom Closet" was published in TEN which is the Tech Engineering News published here at Tech, in 1952. You might be able to obtain a reprint from them although I believe their staff is not active during the summer. I am sorry that I can not be more helpful but I will hold your letter and ask his secretary to find the information for you when she returns in the fall.

Very sincerely yours,

Ruth S. Goodwin  
Secretary

[ans 9/29/54]



**HOGAN LABORATORIES, INC.**

**155 PERRY STREET**

**NEW YORK**

**14**

**JOHN V. L. HOGAN**  
**PRESIDENT**

**TELEPHONE**  
**CHELSEA 2-7855**

29 July 1954

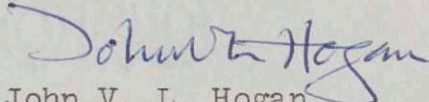
Miss Ruth S. Goodwin, Secretary  
Department of Mathematics  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Miss Goodwin:

Thank you for your letter of July 28th.

I succeeded in locating "The Miracle of the Broom Closet"  
in "The Fantasy and Science Fiction Magazine" for February,  
1954, but will be glad to hear from you as to where "The Brain"  
was published.

Sincerely yours,

  
John V. L. Hogan

CC to: Professor Norbert Wiener

[ms 9/22/54]

HOGAN LABORATORIES, INC.  
155 PERRY STREET  
NEW YORK 14, N. Y.

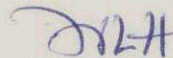
29 July 1954

Miss Ruth S. Goodwin, Secretary  
Department of Mathematics  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

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CC to: Professor Norbert Wiener ✓

NATIONAL SCIENCE FOUNDATION  
WASHINGTON 25, D. C.

July 29, 1954

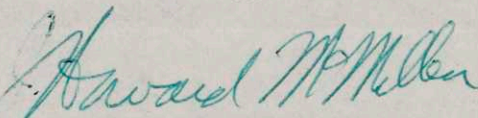
Dr. Norbert Wiener  
Department of Mathematics  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Doctor Wiener:

We have your letter of July 22nd in which you ask whether a more detailed analysis of Dr. Yevick's proposal is in order. We would be pleased to have you hold this proposal until we have had a chance to receive other reviews. It may be that at a later date we would like to accept your offer to look into the mathematics more carefully. We are reluctant to request this at the present time, but may do so later.

We appreciate the comments you have already sent us.

Yours sincerely,



J. Howard McMillen  
Program Director  
for Physics (Acting)

[ans 8/9/54]

South Tamworth  
New Hampshire  
July 29, 1954

Mr. Paul Brooks  
Houghton Mifflin Company  
2 Park Street  
Boston 7, Massachusetts

Dear Mr. Brooks:

Many thanks for the copy of the Houghton Mifflin edition of the revised THE HUMAN USE OF HUMAN BEINGS. It looks very good indeed. I shall certainly let you know if I need any more copies. I am very much touched by your friendly letter to me.

Sincerely yours,

Norbert Wiener

NW:jc

South Tamworth  
New Hampshire  
July 29, 1954

Mr. Jason Epstein  
Doubleday and Company, Inc.  
575 Madison Avenue  
New York 22, New York

Dear Mr. Epstein:

I have been a little delayed in making the corrections for my first chapter because of a great pressure of other work. I had to go down to the city for an extremely active week of summer school lecturing, engineering consultation and a desperate attempt to clear up some difficulties in my quantum theory work. Now these are over and I have found more than a week's time to revise my manuscript. The revision that you find is not a first copy, but at least a second copy, and in many places a third copy.

I cannot say that I have everywhere been able to follow the precise order of treatment which you have suggested to me, but I have come very close to it, and I believe I have integrated all your important points into my work. There are cases where your suggestions, although perfectly correct in spirit, do not in fact correspond to the detailed order which I have followed in my work. However, nothing is missing, and I believe very little if anything is superfluous.

The revised chapter comes to some thirty-seven pages. I could very easily be split in two in the middle at the time when I secured my M. I. T. job through Osgood's influence. Whether it should be so split, I leave entirely to your judgment.

I have been very particular to give both names of my characters, at least when they appear for the first time and to give a description of their personalities. Most of the characters have already shown their importance for the book, but there are a few whom I meet at this period and whose real significance

Mr. Jason Epstein

2.

July 29, 1954

will only appear later. So much for the manuscript. I should like to know as soon as possible whether you approve of it and what you propose to do next. The stream of my commitments has already slackened somewhat, and I am prepared at any moment for the next chapter or chapters to which I intend to devote the same care in revision which I believe I have already shown.

Margaret and I enjoyed very much the visit of yourself and your wife. Now that both of you have found your way hither, let me hope that you won't forget it. Whenever you can sandwich in a professional or unprofessional visit to us among your duties of editing and soliciting manuscripts, consider yourself invited.

Sincerely yours,

Norbert Wiener

NW:jc

concerning reprint

South Tamworth  
New Hampshire  
July 29, 1954

Mrs. Ruth Goodwin  
Mathematics Department  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Mrs. Goodwin:

Can you look this matter up for me?

Sincerely yours,

Norbert Wiener

NW:jc

South Tamworth  
New Hampshire  
July 29, 1954

Professor Y. W. Lee  
Department of Electrical Engineering  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Lee:

I recently received the following letter which I think is not based on any very clear notion of circuit analysis and circuit synthesis. Could you see that Mr. Vowels gets some of our material, in particular the notes of this summer's lecture? If there were some way of indicating to him the number of our patent, he could unquestionably secure a copy of it from Washington.

I think we had a most successful week and I am now completely recovered from the fatigue. Margaret and I send best wishes to Betty and you.

Sincerely yours,

Norbert Wiener

NW:je



South Tamworth  
New Hampshire  
July 29, 1954

Mr. John Leggett, Publicity Director  
Houghton Mifflin Company  
2 Park Street  
Boston 7, Massachusetts

Dear Mr. Leggett:

Many thanks for your suggestions of what you need for an interview concerning THE HUMAN USE OF HUMAN BEINGS. As to the revision of THE HUMAN USE, I am afraid that the subject isn't very usable by you for advertising purposes as it came from Jason Epstein. As you know, he bought the paper-back rights from you people for the Anchor Series and he kept at me as an editor until the new edition appeared in what was for him satisfactory form. I myself felt that as it was a few years after the first writing of my book, the time had come to write from a slightly different point of view and to consider what had happened in between. However, I don't see how you can bring Mr. Epstein into it without giving heavy advertisement to an edition of the book at less than a quarter the cost of your own. Luckily this is your headache and not my own, as I had nothing to do with soliciting Jason about the paper-back edition. He came to me and in fact he came to me after he had cleared everything with you people.

Now as to No. 2, "Does it disturb you that such a work has to be revised, and do you think it will have to be revised again in a similar length of time?" The answer is no. The only books that do not need revision apart from a few great literary masterpieces are the books that are on the shelf. So long as cybernetics represents an active field of study, any book concerning it will have to be revised not once but many times.

"3. Would you think it advisable to make the next edition a loose-leaf one so that new information may be added daily as the situation changes?" The answer is no. If the book were purely a matter of

Mr. John Leggett

2.

July 29, 1954

detailed information, the various editions to it might be compiled in a loose-leaf manner. This, in fact, is a very excellent way of treating handbooks and the like. When however a considerable part of the changes in a book are reflective and matters of philosophical thought, no purely additive combination of the pieces is suitable. In other words, a book like THE HUMAN USE OF HUMAN BEINGS must grow like a living being and not merely be added to like a heap of bricks.

Your question No. 4 is, "Is it just the computing machines that have changed since the first edition? Is it possible that the human being has changed? Or your views about him?" Here my answer would be that the chief problem with which I have been concerned in THE HUMAN USE OF HUMAN BEINGS is not merely the technical development of the computing machine, but the possibilities of the computing machine as a servant to man and a danger to man. This certainly involves the technical development of the machine itself, but it also involves the human understanding of the place of the machine. I don't think that man has been very deeply changed by the machine, but I think that he is coming to realize more and more adequately those new problems which the machine possesses for him.

"5. What about yourself as an author? Do you feel that the intervening years have perfected your craft as a writer and organizer of scientific material for popular consumption?" Perfect is a strong word. I think I am doing a better job than I did at the beginning, but I have no claims that it is a perfect job. I know that I have something to say and that I can say it to some effect, but I write very much as an individual and probably I am less aware of the precise impression that my writing makes on the reader than I should be. Still, practicing any craft, while it may not make perfect, at least makes better. I believe that from the purely literary point of view and from the point of view of exposition, every book job I have done is better than the last. My conceit extends to the point of supposing that I can say something worthwhile and say it interestingly, but

Mr. John Leggett

3.

July 29, 1954

that that my advantages of strength and enthusiasm have to be set against a certain clumsiness and perhaps insensitivity to the needs of the reader. However, at the age of nearly sixty, I have not given up learning.

Lord only knows what you can do with this material. If it suggests something more formal in the way of interview which you want to send to me, I am ready to receive it and to reply. At any rate, I want to see what you are going to print before you print it.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 8/2/54]

South Tamworth  
New Hampshire  
July 29, 1954

M. F. Le Lionnais  
24 rue du Champ de Mars  
Paris VIIeme, France

Dear M. Lionnais:

I am writing in English as I am dictating to my secretary and she does not speak French. Many thanks for your courteous letter of July 23. I am already to go ahead with you in your plans and thoroughly approve of the idea of being interviewed by M. Vallee. I suggest for a subject No. 2 c of the first page of your summary for this reason: it appears to me that the statistical standpoint of Gibbs which so dominates modern physics must lead necessarily to a motivated view of the nature of the eternal world and in particular to a view departing considerably from the naive realism of Bertrand Russell. The point I am making is this: in Gibbsian physics we are always speaking about ensembles, so that what we are discussing is not the world but a set of possible worlds. These sets can be considered as the answers to questions and they must be measurable sets in a sense closely analogous to that of Lebesgue. This is a heavy restriction, for not all sets are measurable. Moreover, the world represents a set which, although measurable, is of 0 measure and which must be discarded in all significant discussions of the Lebesgue theory.

We are already familiar in Gibbsian physics with the fact that the world, whatever it may mean, does not give scope to the notion of entropy which only belongs to a class of possible worlds. There is every indication that the Gibbsian point of view is destined to extend itself to the whole of quantum theory and that this statistical nature of the problem of entropy in fact belongs to all problems in physics. Thus the notion of the world is neither sufficient for the needs of modern physics nor is it useful in elucidating a physics in which we can never know the

M. F. Le Lionnais

2.

July 29, 1954

absolutely precise system with which we are dealing.

You will remember that one of Bertrand Russell's great contributions to modern logic was to adopt the notion of logical types on the basis of the work of Frege. The realism which supposes of the world seems to me to speak necessarily of the ensemble of all possible questions concerning the world and to violate the spirit if not the letter of the theory of types. This is quite in accordance with Russell's later unwillingness to adopt Goedel's extensions of the theory of types in which he points out the essential incompleteness of logic and the impossibility of writing down a closed set of formal laws from which the whole of logic may be deduced in a quasi mechanical way. It is ironic that the great philosopher who transferred the notion of logical type from the abstractions of the technical mathematician to thought in general should have left this notion in what seems to me at least such a rudimentary and unsatisfying form. You will see that what I have given here is not enough for a complete paper or interview, but if it meets your approval, it may well serve as the theme for the interview which I am going to give M. Vallee.

With best remembrances of our Paris meeting,  
I remain,

Sincerely yours,

Norbert Wiener

NW:jc

P. S. My wife and I are likely to be in France next summer on our way to another stay in India.

N. W.

[ans 8/6/54]

South Tamworth  
New Hampshire  
July 29, 1954

Mr. Andrew G. Pikler  
Code 2920/f  
United States Navy Electronics Laboratory  
San Diego 52, California

Dear Mr. Pikler:

The notion of relative pitch I believe depends as you suppose on some sort of clocking. When this clocking is unusually sharp and constant you may get absolute pitch, but if it is variable and drifts, all you can hope to get is relative pitch. Where this clocking takes place, I do not know. My suspicion is that the brain contains not one but many clocks of different periods. The alpha rhythm clock is being studied now very carefully at the Massachusetts General Hospital by means of autocorrelation methods or in more familiar physical language of interferometer methods. We have succeeded in showing definitely that this clock which beats at about ten per second is accurate in frequency to at least a twentieth of a cycle and very possibly to a fiftieth of a cycle. Whether it is still more accurate, we do not know, but even at a fiftieth of a cycle we are getting to ranges well within the audio limit. I don't think that the alpha rhythm is what you are looking for, but it is still quite possible that it may excite high overtones of a sufficiently sharp frequency to be useful in pitch recognition.

The relativity of hearing with which you are concerned almost certainly has nothing to do with optical relativity. The uncertainty of frequency as heard by a person without absolute pitch simply does not bring you to a range where the velocity of light is of any importance.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 8/4/54]

South Tamworth  
New Hampshire  
July 29, 1954

Mr. Hans Rademacher  
1062 East 21st Avenue  
Eugene, Oregon

Dear Rademacher:

I won't be at the Congress in Amsterdam this summer.

As to Black Mountain College--I am waiting to hear  
from them and shall accept.

Sincerely yours,

Norbert Wiener

NW:jc

[ans. 8/1/54]

South Tamworth  
New Hampshire  
July 29, 1954

Professor R. E. Vowels  
School of Electrical Engineering  
N. S. W. University of Technology  
BROADWAY, N. S. W., Australia

Dear Professor Vowels:

The trouble with your question is that expansions such as you are considering are not essentially unique. The hard problems in mathematics are not those where there is only one way to do a thing, but when there are many ways and it is practically impossible to decide which is the best.

Before going more specifically into your problem, I suggest that you look into some old work of Dr. Y. W. Lee and myself on the synthesis and analysis of electrical impedances. We have done a considerable amount of work in this field as has a man by the name of Laguerre; and there are inconceivably similar courses available of the form which you suggest in your letter. I am sending your letter on to Dr. Lee and asking him to supply you with any material we may have available.

Sincerely yours,

Herbert Wiener

NW:jc



ADELPHI COLLEGE  
GARDEN CITY - NEW YORK

SPEECH AND DRAMATIC  
ART DEPARTMENT

July 30, 1954

Dr Norbert Wiener  
Dept of Mathematics  
M.I.T.  
Boston, Mass.

Dear Dr Wiener,

I was so moved by your chapter in the "Role of the Intellectual and the Scientist" in the Human Use of Human Beings that I feel urged to write my personal expression of thanks to you for having said something that had to be said. I am equally disturbed about conformity on the Phd level, which, it seems, is no more than the general acceptance of conformity which exists in everyday life. All independent thought is being stifled! One is rewarded highly for joining the milling throngs.

I have yet to pass through the homogenizing machinery of the doctorate, although I attempted to avoid it at two State Universities. My turn to be plunged into the mould has yet to come. When it does however, it will be with, what Ruth Benedict used to call the "social cloak of conformity".

I was disturbed and a bit shocked to find on the Phd level more compulsivity, more conformity, more anxiety, more mechanization, more staleness of thought than I had hitherto imagined. Individuality meant rebellion and rebellion was strictly forbidden. There was a stagnancy of ideas; a lack of spontaneity and that spirit which identified the old scholar. Inbreeding of staff was an obvious way to insure conformity and increase the probability of the department remaining on the 'good' list.

I was shocked, too, to discover students faked data on thesis work and dissertations, took topics which were looked upon with favor and approbation by the staff and avoided controversy or dissenting experiences. To remain intact ego-wise, one either had to be so obviously brilliant that one could remain aloof and have no isolated care of not getting through a program, or one shunned off one's inner growth demands, and with schizoid detachment or even enthusiasm (sic!) plunged forward. The manner with which students repeated verbatim what had been delivered as dogma in the classroom, was a bitter reflection of trends.

It is a sad commentary on the graduate school to find so many people in professorial chairs, who retain their status by perpetuating conformity; whose desire for status, prestige, income and personal safety are more important than scholarship, integrity,

ADELPHI COLLEGE  
GARDEN CITY - NEW YORK

SPEECH AND DRAMATIC  
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2-

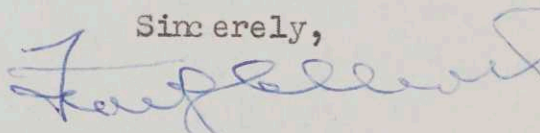
honesty and the search for truth.

I have never seen more people "playing it safe". One glance at the kinds of materials coming out of graduate schools will give us a poignant image of the static, dull and lifeless research, without purpose, meaning or, unfortunately, applicability to daily living. It was Thurstone, I believe, who pointed out that the field of psychology had substituted quantification, probability tables, correlations and the like for newness of ideas, for feelings and sensitivity. I cannot help but agreeing.

The barrenness of the research is terribly disturbing. I have heard dissertations referred to as "academic exercises"--more appropriately "academic exercises in conformity."

My thanks to you for having said what had to be said. "Heaven save us from the papers which are correct and elegant, but without body or spirit."

Sincerely,



Franklyn Elliott, Director  
Speech and Hearing Center  
Adelphi College

[ans 8/4/54]

# AMERICAN SOCIETY OF PLANNING OFFICIALS

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July 30, 1954

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## EXECUTIVE DIRECTOR

DENNIS O'HARROW

Professor Norbert Wiener  
Massachusetts Institute of Technology  
77 Massachusetts Avenue  
Cambridge 39, Massachusetts

Dear Professor Wiener:

We are pleased to send you the Preliminary Program of the 1954 ASPO National Planning Conference. You will also note a hotel reservation card, and a memorandum to participants. Your particular address is, of course, an exception to the "20-30 minutes" limitation.

A form for biographical data is enclosed for your use, unless you have this available in another form.

A complimentary ticket for the luncheon on Tuesday, September 28th, will be held for you at the Registration Desk. Your registration will, of course, be complimented.

Please let us know if we may be of assistance to you in any way.

Sincerely,

  
Executive Director

DOH:dp

Enclosures

1934

1954

*National Planning Conference Philadelphia Sept. 26 - 30, 1954*

THE BENJAMIN FRANKLIN HOTEL

{ ans 8/4/54 }

{ ans 8/6/54 }

HARVARD UNIVERSITY  
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CONDUCTED UNDER THE AUSPICES OF THE  
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WILLIAM Y. ELLIOTT, *Director*

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July 30, 1954

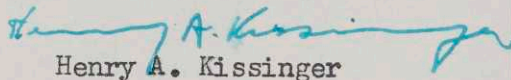
Professor Norbert Wiener  
Room 2 - 155  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

Dear Professor Wiener:

I am sure it was clear to you that your visit and talk with the International Seminar was a complete success as far as the participants and the staff are concerned. I can only hope that it was equally enjoyable and satisfying for you.

I should like to express our sincere appreciation for your interest in our program and for your kind cooperation, which have done much to make the summer worthwhile for the members of the Seminar.

Sincerely yours,



Henry A. Kissinger

HAK:as

[ms 8/4/54]

THE OHIO STATE UNIVERSITY

HOWARD L. BEVIS, *President*  
COLUMBUS 10

COLLEGE OF EDUCATION  
DEPARTMENT OF PSYCHOLOGY

July 30, 1954

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

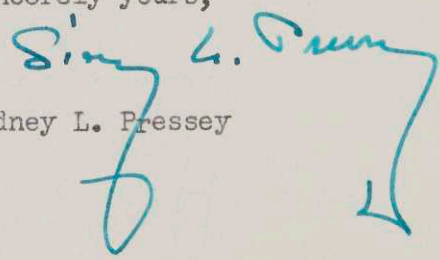
Dear Dr. Wiener:

I have just finished reading your very interesting and significant autobiography; to me it is especially interesting because I was a graduate student at Harvard during part of your time there, and significant because I have recently been gathering data regarding precocious genius as bearing on educational programs for superior students.

You may possibly have seen a paper by Terman in the June 1954 issue of the American Psychologist titled the "Discovery and Encouragement of Exceptional Talent". He emphasizes the value of early discovery and rapid progress of superior youngsters. In extensive studies here during and immediately after the war we also found value in rapid progress (though finding other means than a lengthened school year most desirable). All this ties in with Lehman's findings regarding that best creative work is done early in the adult years.

It is my feelings that if American schools would only admit bright children rather freely a year or two earlier than the usual age of six, and let them progress a little more rapidly than the average when they showed themselves ready for such progress, substantial gains in educational effectiveness as well as saving of time might be obtained, without causing problems of adjustment which usually follow, where only the very occasional youngster is so treated. And if in addition, special opportunities might be available for the very superior individuals, avoiding the mistakes from which the "prodigies" of your time suffered, much might be done for them. I would be interested in your judgment in these matters.

Sincerely yours,

  
Sidney L. Pressey

SLP/kf

[ans 8/9/54]

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July 30, 1954

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*Executive Secretary*

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

Dear Professor Wiener:

I am writing on behalf of the Conference Board Committee to inform you that the National University of Mexico has forwarded through the Department of State a request for you to give a series of lectures at the University during the coming academic year under the Smith-Mundt Educational Exchange Program.

The appointment would be for a one or two month period preferably early this fall. The University would, however, be pleased to arrange for the lectures to be given later in the academic year if you are not able to consider an appointment during the fall.

The Committee would be happy to propose your name for consideration by the Department of State for the above lectureship, and would appreciate an early indication from you as to the possibility of your being able to get away.

An award would provide an appropriate stipend, a maintenance allowance and transportation. The grant would be paid partly in dollars provided through an appropriation made by the U.S. Congress and partly in currency contributed by the Mexican Government for the support of the Program. Under the terms of the Smith-Mundt Act no provision is made for the transportation of dependents.

I am writing to you in the absence of Dr. Theodore T. Dombros, to whom the Committee has given the responsibility for detailed activities relating to appointments under the Smith-Mundt program. He will return from vacation early next week and will be glad to answer any questions you have concerning the award or the operation of the program.

Sincerely yours,

*Truisten W. Russell*  
Truisten W. Russell  
Executive Associate

TWR/ac

[ans 8/3/54]

South Tamworth  
New Hampshire  
July 30, 1954

Esso Standard Oil Company  
Touring Department  
25 Broadway  
New York, New York

Gentlemen:

My wife and I are planning to make a trip through the Maritime Provinces for two weeks about the middle of August. We intend to run up the Maine coast from our place in Center Sandwich, New Hampshire and to cross over New Brunswick, probably paying a visit to Prince Edward Island. This will depend on whether we find the ferry fare to be excessive. From Prince Edward Island we shall make the tour of Nova Scotia and among the places we would like to see are the Cape Breton region, Lunenburg, Halifax, and the Annapolis Valley. The trip should take from one week to two weeks. We are people of moderate means and are prepared to stay at motels, cabins, or simply decent country inns. Any help that you can give in planning the trip will be appreciated.

Sincerely yours,

Norbert Wiener

NW:jc

South Tamworth  
New Hampshire  
July 31, 1954

Mr. Fassett  
Technology Press  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Mr. Fassett:

I have just had the bad luck to hear of Freymann's death. Since there are several business matters pending between us and concerning Cybernetics, and since the Technology Press also has an interest there, I am enclosing the letter I have received from Hermann, Freymann's brother-in-law, together with a group of contracts which are awaiting my signature, or at least approval. I also inclose a draft of a French letter which I am proposing to send to Hermann. Would you be kind enough to do the following things: to look over the entire correspondence together with the contracts and to tell me whether it is all right to go ahead, and at any rate, what reservations I should make. (My wife tells me that the contracts that they are sending me are not fully drawn-up contracts for immediate signature, but samples of the sort of contract they would like to put through.)

I have been extremely busy all summer extending the quantum theoretical results of Siegel and myself and writing a long memoir for the anniversary volume of a Swiss friend of mine in which I develop much of the mathematics I am going to embody in my treatise in cybernetics. I am also revising the second volume of my autobiography for Jason Epstein.

Sincerely yours,

Norbert Wiener

NW:jc

[ans 8/5/54]



South Tamworth  
New Hampshire  
July 30, 1954

Mr. Armand Siegel  
Boston University  
Boston, Massachusetts

Dear Siegel:

By now I have convinced myself of two things. First, that in the detail of our supposition for quantum theory we have been beating our heads against a stone wall, and second, that there is another way of approaching the subject which will come out all right and quite easy. The mistake we have made, or better said I have made, consists in the fact that we have not broken up our time interval into infinitesimal bits in our discussion of the change of the character function under a superimposed field. For the moment let us consider that we have a set of normal and orthogonal functions

$$\psi_n(x, t)$$

which change with the parameter  $t$  the time. It will be supposed to change continuously so that  $n$  can be identified for any value of time by tracing backward to

$$\psi_n(x, 0)$$

In other words, what we are really considering is a Schrödinger equation in which the Hamiltonian is not constant.

The problem we must consider is the way that these functions slip into one another as the field changes. If we suppose that one of the characteristic functions

$$\psi_m(x, t)$$

is picked out at time  $t$ , we wish to give the rule according to which there is a transition to

$$\psi_p(x, t+dt)$$

at time  $t+dt$ . This rule proceeds as follows: we

write  $\varphi_m(x, t) = \sum A_{m,p} \varphi_p(x, t + dt)$

We also suppose that at time 0 we take a point in differential space corresponding to  $\alpha$  and that this point in differential space is

$$X(\alpha, x; 0)$$

Then we suppose that this generates in the course of time an expression

$$X(\alpha, x; t)$$

so that the same set of transformations which changes

$$\varphi_n(x, 0)$$

into

$$\varphi_n(x, t)$$

changes

$$X(\alpha, x; 0)$$

into

$$X(\alpha, x; t)$$

We can thus write

$$X(\alpha, x; t) = X(T(t)\alpha, x)$$

where  $T(t)$  represents the measure-preserving transformations which correspond in differential space to the unitary transformations in Hilbert space, converting

$$\varphi_n(x, 0)$$

into

$$\varphi_n(x, t)$$

We shall suppose that

$$\xi_p = \int_{-\infty}^{\infty} \varphi_p(x, t + dt) dX(T(t)\alpha, x)$$

We shall then consider the quantities

$$\frac{|\xi_p|^2}{|A_{mp}|^2}$$

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At each stage, we shall suppose that one value  $\underline{m}$  is what we call the preferred value. Over a very short interval  $dt$  where  $\underline{m}$  will continue to be a preferred value or some one of the quantities

$$\frac{|\xi_p|^2}{|A_{mp}|^2}$$

will be less than all the others and in particular will be less than

$$\frac{|\xi_m|^2}{|A_{mm}|^2}$$

where for sufficiently small values of  $dt$  we can take

$$|A_{mm}| = 1$$

This process will of course have to be started at some time and it is no excessive restriction to suppose that this time is

$$t=0$$

This procedure will give us as a function of  $\alpha$  a sequence of selections of values of  $\underline{m}$  and of characteristic functions

$$\psi_m(\alpha, t)$$

It is not difficult to show that in this selection the changes of the subscript  $\underline{m}$  are discrete except for a set of cases of total probability 0 in . The reason for this is that when a new expression

$$\frac{|\xi_p|^2}{|A_{mp}|^2}$$

becomes a minimum, the change made in this expression instantaneously by picking out the  $p$ 'th characteristic function increases the denominator to 1 and decreases the expression. We have thus given a means of interpreting a value of  $\alpha$  as a discrete sequence of selections of characteristic functions. We have obtained something which locally and for short periods approximates to a Poisson sequence of quantum jumps in terms of the parameter which is subject to nothing but a continued sequence of measure-preserving transformations.

Now it will be clear that we do not at once get the phase independence of successive quantum jumps

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which we need for the classical form of quantum theory. However, this can be taken account of in the way we have always hoped, namely in a slow process of field change and of an ignorance on our part as to the exact time when we make this field change. Under these circumstances of phase indeterminism, it will be possible to show that the process by which one set of characteristic functions

$$\psi_m(x, t)$$

lapses into another set

$$\psi_p(x, t + t_1)$$

will have the probability of transition between

$$\psi_m \quad \text{and} \quad \psi_p$$

equal to

$$\left| \int_{-\infty}^{\infty} \psi_m(x, t) \overline{\psi_p(x, t)} dt \right|^2$$

What I am giving you now is frightfully sketchy, but I am certain that it can be tightened up to make it go. The real ideas to keep in mind are:

1. That at every stage we have only one characteristic function represented for the determination of which we need the whole of the past or at least the whole of the past up to a given epoch. The sequence of the single function chosen at each time depends on  $\alpha$  and the chosen function jumps from your value of  $\underline{m}$  to another after periods of time in which there is no jump. In other words, we have got a picture of each single value of  $\alpha$  which is like the statistical picture which we get at quantum theory.
2. Once we have this  $\alpha$  model of the statistical jumps in the individual case, we are able to use the same phase in determination principle of which we have already caught sight to establish the desired relation between probability amplitudes and probability destination.

The idea I am passing on to you still needs a lot of check and development, but I am pretty sure

Mr. Armand Siegel

5.

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it is right. I am passing it over to you at the present time because I want to get you as soon as possible in the position to do further original work. I am using your particular Ansatz concerning the smallest quotient, but in an infinitesimal form instead of an integrated form, which allows me to avoid those nasty problems of the all over positiveness of a sum. I believe these problems are really serious and even unconquerable.

Please pass this on to Vallée. I hope that you will both work on it as well as myself, and assure you that I prefer it that way. Tell Vallée that I have just heard from Le Lionnais and I am already to go ahead with him with an interview for Vallee.

So far this summer I have sent off my Festschrift to Plancherel on the subject of matrix factorization. I am also making a considerable amount of headway on what Jason Epstein considers an improved version of the autobiography. Barbara and Toby are coming here day after tomorrow and leaving the kids with us for a couple of weeks while they vacation in the Thousand Islands. Then Toby is going on a business trip and Barbara is coming here for two weeks with the children. Then we are going to take a little excursion into the Maritime Provinces. Peggy will probably not come up here but is already on the Cape vacationing for a weekend with John, who has just finished a tour of military duty there. Best regards from family to family.

Yours,

Norbert Wiener

NW:jmc

P. S. I want you to write me at any time that meets your convenience concerning the ideas in this note. I am convinced that there is something in them, but I expect it will take us some time to fight it out.

N. W.

[ans 8/3/54]

Zürich, den 31. Juli 1954.

Herrn Professor Dr. N. Wiener  
Departement of Mathematics  
Mass. Institute of Technology  
Cambridge 39 (Mass.)

Sehr geehrter Herr Kollege !

Mit Freuden bestätige ich Ihnen, dass Ihr Manuskript am 29. Juli bei mir angekommen ist. Die Arbeit wird Ende Januar oder Februar des nächsten Jahres in dem Herrn Plancherel gewidmeten (zum 70. Geburtstag) Heft der Commentarii erscheinen, Dürfte ich Sie bitten, mir gelegentlich die kleine Widmung, mit der die Arbeit zu versehen ist, noch mitzuteilen, oder dann bei der ersten Korrektur anbringen zu wollen ?

Indem ich Ihnen für das Manuskript noch herzlich danke, verbleibe ich mit den besten Grüßen

Ihr ergebener

*A. Pfluger*

(A. Pfluger)

[anz 8/6/54]

South Tamworth  
New Hampshire  
July 31, 1954

Mr. Lawrence J. Fogel  
Stavid Engineering, Inc.  
312 Park Avenue  
Plainfield, New Jersey

Dear Mr. Fogel:

It is now about two weeks since I have returned from my course of lectures at M. I. T. I was exceedingly tired when I came back, but I have since recovered and have been actively engaged both in mathematical and in literary work. I have been expecting all the time to hear from you about your plans for a possible visit on my part to northern New Jersey, but up till now I have heard nothing. I am writing to let you know of my plans and to enable you to adjust your own to fit them.

My son-in-law, Gordon Raisbeck, is coming up this afternoon with my daughter and my grandchildren for the weekend. They are leaving the grandchildren with us for about two weeks, after which my daughter will come here and take possession for another two weeks while my wife and I go for an automobile trip to Canada. We are counting very much on this trip for a little relaxation and do not intend to interrupt it under any circumstances for engineering consultation or for any other work. Thus, the availability of different times for consultation is the following: from now until the middle of August, excellent. I have nothing very pressing on either in the way of research or literary composition and can get away at any time if you give me good notice. From August 15 to September 1, out. I will not accept any engagements whatever for that period. From September 1 on there is a week in which I have an as yet incompletely fixed engagement to meet a French friend who is visiting us. From then on I have no binding engagements until around the twenty-fifth of September when I shall be lecturing to a group of city planners in Philadelphia. I do not wish to conflict my work during the academic term by any consultation which I can avoid.

Sincerely yours,

Norbert Wiener

Lawrence J. Fogel

STAVID ENGINEERING  
INCORPORATED  
Field Division

312 PARK AVENUE  
PLAINFIELD, N. J.  
PLAINFIELD 6-4806



le 31 juillet, 1954

Hermann et Cie.  
6, Rue de la Sorbonne  
Paris, 5e  
France

Cher M. ~~Hermann~~.

Je regrette beaucoup d'apprendre le décès de mon ami, votre beau-frère M. Freymann. Il était toujours une partie très importante de mes visites à Paris, de causer avec lui et d'obtenir de lui de l'inspiration sur chaque sujet. La dernière fois quand j'étais à Paris en décembre en route aux Indes, il me semblait très déprimé à cause de ses efforts à protéger la santé de Mme. Freymann et surtout très surmené. Il laisse derrière lui une lacune considérable dans l'édition de livres scientifiques français. M. Wiener et ma fille Peggy aussi bien que moi conserveront des impressions très amicales de lui.

Je suis très content d'apprendre que vous avez l'intention de continuer les Actualités Scientifiques. Je ne trouve à ce moment en vacances dans les montagnes de New Hampshire, et à cause de cela je suis séparé de toute ma correspondance. Quant aux traductions de mon livre je suis en général d'accord avec vous, mais pour éviter la confusion, je suggère que j'ai votre permission à soumettre le contrat à la Technology Press. Je leur enverrai les copies de vos contrats et votre correspondance, mais je préférerais si les deux éditeurs ne sont pas absolument d'accord, qu'ils règlent les contrats entre eux-mêmes.

Quand j'étais à Paris en route aux Indes, M. Freymann me donnait une somme d'à peu près deux cents dollars, la moitié pour les copies vendues de l'édition française en langue anglaise de Cybernetics et l'autre moitié pour le droit de traduction en italien. Ce que vous dites sur le contrat avec Bompiani ne me fait pas sûr s'ils ont accepté le contrat ou non.

Je suis à votre service en faisant tout ce que je peux pour régler ces affaires.

Veuillez agréer, cher Monsieur, l'expression de ma considération distinguée.

[ans 8/9/54]

le 31 juillet, 1954

Hermann et Cie,  
6, Rue de la Sorbonne  
Paris, 5e  
France

Her  
Cher M. Hermann:

Je regrette beaucoup d'apprendre le décès de mon ami, votre beau-frère M. Freymann. Il était toujours une partie très importante de mes visites à Paris, de causer avec lui et de dériver de lui de l'inspiration sur chaque sujet. La dernière fois quand j'étais à Paris en décembre en route aux Indes, il me semblait très déprimé à cause de ses efforts à protéger la santé de Mme. Freymann et surtout très surmené. Il laisse derrière lui une lacune considérable dans l'édition de livres scientifiques et j'ai eu des impressions très arcales de lui.

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South Tamworth  
New Hampshire  
July 31, 1954

Miss Mina Ross  
Secretary to Executive Vice President  
POCKET BOOKS  
630 Fifth Avenue  
New York 20, New York

Dear Miss Ross:

I enclose a copy of the contract between  
Pocket Books, Inc. and myself covering my work  
EIGHT YEARS OF CYBERNETICS AND THE ELECTRONIC  
BRAIN. I have received the check for \$300 covering  
this, and I am sending it immediately for deposit.

Sincerely yours,

Norbert Wiener

NW:jc

Enc.