281

CORRESPONDENCE May 11–31, 1960

N. WIENER MC 22

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1960 MAY 25 PM 3 20

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=LT PROFESSOR WIENER MIT 77=

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NAUMOV.

[ans 5/27/60]

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SCIENCE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
1515 MASSACHUSETTS AVENUE, NW, WASHINGTON 5, D.C. • DUPONT 7-7171

11 May 1960

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Wiener:

We have accepted for publication as a letter, a communication from Mr. Mortimer Taube commenting on your recent article in Science, copy of which is enclosed.

We are glad to give you an opportunity to reply for simultaneous publication, if you wish to do so. Your reply should be in our hands within two weeks.

Sincerely,

Graham DuShane
Editor

Enclosure
GDuS:lw

[ans 5/27/60]

DOCUMENTATION
INCORPORATED
[illegible] CONNECTICUT AVENUE, N.W.
WASHINGTON 8, D.C.
COLUMBIA 5-5420

May 10, 1960

Mr. Graham DuShane, Editor
Science
1515 Massachusetts Avenue, N. W.
Washington 5, D. C.

Dear Sir:

Since Science is intended not only for scientists in general but also for intelligent and interested laymen, it seems unfortunate that Professor Wiener should have permitted himself to use the jargon of computer specialists without any explanation of the special meanings which accompany this jargon. Professor Wiener discusses checker-playing machines, chess-playing machines, and learning machines, which may give the impression that these are actual physical embodiments of such abilities. Actually, no such machines exist. Professor Wiener has here followed the practice of discussing a program on a general purpose computer as though it represented a special purpose machine which would operate in the manner set forth in the program.

A program is a set of numbers in a certain order, and without human interpretation it remains only that. Undoubtedly a machine could be built which could move checkers and chessmen, but it could only operate on standard size pieces and could not recognize as chessmen the enormous range of different designs which the human player recognizes and moves around quite simply.

It is also possible to play abstract chess, like games in a book, without moving pieces physically; but there are analog relationships in real chess,

e.g., the emptiness of a line which is the requirement for movement or castling, which cannot be directly handled by any digital machine. These analog relationships can be approximated digitally by remembering and recalculating the moves of all other places in order to determine whether a given line is empty and, hence, that a certain move is possible. But such a set of calculations is not identical to the visual fact that the space between two pieces is empty. A large part of the enjoyment of chess, e.g., its relationship to war games, derives from its deployment or topological character, which a machine cannot handle except by eliminating. Professor Wiener recognizes this problem by noting that different programs would be required for opening, middle, and end games. In the usual meaning of "game", before the word was redefined by computer enthusiasts with nothing more serious to do, it is possible to state categorically that machines cannot play games. They cannot play chess, any more than they can play football.

In Professor Wiener's earlier work on Cybernetics, he was able to make a case for learning machines only by equating learning with conditioned reflexes. As a matter of fact, the doctrine of conditioned reflexes as an explanation of human habits and human learning is certainly questionable, if not false. Sherrington can be accepted as an authority that although the behavior of living organisms can be modified by subjecting them to certain patterns of experience, reflexes in the physiological sense of that term are not conditionable or modifiable. In short, the expression "conditioned reflex" is a contradiction, because physiologists distinguish reflex activity from other types of nervous activity on the basis of the fact that reflexes can't be conditioned. There is nothing more strange or mysterious in this fact than there is in the denial of the Lamarckian doctrine of the inheritance

of acquired characteristics. Sherrington explicitly and categorically distinguishes reflex behavior from habitual behavior on the grounds that habitual behavior is acquired and modifiable, whereas reflex behavior is not.

Having described the feedback operations of computers in Cybernetics, Professor Wiener goes on to say:

> "I wish to emphasize that I do not say that the process of the conditioned reflex operates according to the mechanism I have given; I merely say that it could so operate. If, however, we assume this or any similar mechanism, there are a good many things we can say concerning it. One is that this mechanism is capable of learning. It has already been recognized that the conditioned reflex is a learning mechanism ... There is nothing in the nature of the computing machine which forbids it to show conditioned reflexes."

When reputable scientists begin to accept explanations merely on the basis that they could be true and that nothing forbids their being true, science becomes indistinguishable from superstition.

One final remark should be made about the danger of heuristic arguments about heuristics in science. Professor Wiener objects to Von Neumann's theory of games, which depends upon stating the complete formal rules of a game, and suggests that we substitute tentative play modified by experience. He justifies this suggestion by pointing out that this is the way human beings play chess, in particular, or run their affairs, in general. He points out that certainly Napoleon won his victories by modifying his strategies

in terms of the different abilities and responses of his opponents. He seems not to recognize that this strategy also led Napoleon to Russia and Elba.

Faithfully yours,

Mortimer Taube
President

M. I. T.

FROM THE INDUSTRIAL LIAISON OFFICE

May 11, 1960

Professor Norbert Wiener
Room 2-276

Dear Dr. Wiener:

Dr. Stratton's announcement of your forthcoming retirement at the end of this academic year gives me an opportunity to wish you well in your new situation. Like so many others at M.I.T. and the thousands of graduates who have been educated here, I am deeply conscious of the greatness which you have personally lent to the Institute.

Best regards,

V. A. Fulmer

V. A. Fulmer

VAF/ess

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Зак. 3031

„11" may 1960 г.

Dear Sir!

. Thank you very much for your letter of 21.3.60 and for your amiable consent to write an article for our review. We would be very glad to see you by us in Moscow, and with greatest impatience we look forward to recieving your article.

With all good wishes for the success of your work,

Sincerly yours

Editor-in-chief A.Okulov.

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Для телеграмм:
Москва ИАТАН

№ 262/623 «11» May 1960.

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

Dear Prof. Wiener,

We have been very happy to learn tha t you and your wife will be coming to Moscow to attend the Ist International IFAC Congress June 27 - July 7.

Referring to your letter of April 15, 1960, we have pleasure to inform your that the royalties from your books published in Russia amount to about 9,000 roubles.

We think that this sum will be quite sufficient to cover your expenses during your stay in the USSR.

If you wish to be paid these royalties immediately after your arrival in Moscow, please, inform the Congress Organizing Committee of the date of your arrival in the USSR at least 15 days in advance.

The lecturers' fees will average 200 roubles for each lecture delivered.

We regret to say that we have been unable to contact Prof. Sokolov whom you mention in your letter. We believe that you'll be able to get in touch with him when you come to Moscow.

Most sincerely yours,

B.N. NAUMOV,
Secretary,
USSR National Committee
of Automatic Control

[ans 5/27/60]

INTERDEPARTMENTAL

MASSACHUSETTS INSTITUTE OF TECHNOLOGY *CAMBRIDGE 39, MASS.*

from the office of Arthur C. Hardy
Room 8-203

May 12, 1960.

Professor Norbert Wiener,
Room 2-276, M.I.T.,
Cambridge 39, Massachusetts.

Dear Norbert:

In the event that something might happen to me between now and next Tuesday (May 17), let me tell you how delighted I am that you have consented to devote an hour of your time to my small group of juniors and seniors in 8.16 on that date. If you stop at my office before 9 a.m., we can go to class together. (If it is more convenient for you, you might prefer to go direct to Room 2-235.)

Sincerely,

Arthur

ACH:Bt

National Society for the Study of Communication

Publishers of the Journal of Communication

May 12, 1960

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

Dear Dr. Wiener:

The members of the Steering Committee of a projected International Interdisciplinary Conference on Communication have selected you as one of the key scholars whose active participation they would solicit.

There is attached a fact sheet which presents tentative plans and makes inquiries concerning your immediate reactions to the project. If positive, would you be willing to participate actively:

As a speaker? _____

As a Discussant? _____

How? _____

On receipt of replies from you and others so addressed, plans will move forward for the procurement of a Foundation Grant to defray cost and travel expenses of speakers and publication of Proceedings.

Plans will soon be under way to structure the program. You would facilitate our efforts by a quick and affirmative reply.

Yours respectfully,

Wesley Wiksell
Co-Chairman

[ans 7/5/60]

FACT SHEET ON THE PROPOSED FIRST INTERNATIONAL INTERDISCIPLINARY CONFERENCE ON COMMUNICATION

I. Rationale of the Conference: Although the nature and the problems of communication are of concern to responsible scholars in many academic areas and to many equally mature men and women in business and industry, in the armed forces, and in scientific laboratories, no group or organization has ever succeeded in bringing together in one place the truly outstanding leaders from these diverse backgrounds. The First International Interdisciplinary Conference on Communication (IICC) would meet this need.

II. History of the proposal

A. The Editor of The Journal of Communication, Dr. Wayne N. Thompson, University of Illinois, Chicago, proposed the IICC during a meeting of the National Council of the National Council of the National Society for the Study of Communication in August, 1959.

B. Assistant Dean Roger Baumeister, Elmhurst College, discussed the idea with the administration of that institution. The extension of an offer to provide facilities for housing, food, and meetings was duly considered at the various administrative levels and approved as a general proposition subject to final action when a definite proposal is available for consideration.

C. The 1959 President of the NSSC, Dr. F. A. Cartier, Air University, Alabama, appointed an ad hoc committee to draft tentative plans. Dean Baumeister was chairman. Other members were Dr. Bess Sondel, University of Chicago; Dr. William Haney, Northwestern University; Dr. Darl Snyder, Elmhurst College; and Dr. Thompson.

D. The National Council of the NSSC at its December, 1959, meeting approved the proposal prepared by the ad hoc committee.

III. Proposed time table

A. January 1, 1960 -- May 15, 1960: Organization of the Steering Committee and the solicitation of critical reactions to the Conference.

B. May 15, 1960 -- July 1, 1960: Preparation of a request for financial support from an educational foundation.

C. July 1, 1960 -- February 1, 1961: Preparation of plans for the program, correspondence with speakers and panelists, and completion of local arrangements for food, housing, and meeting rooms.

D. June or late August, 1961: The Conference

E. July 1, 1962: Publication of the proceedings.

IV. Steering Committee

A. Present membership:
Dr. Robert C. Stanger, President, Elmhurst College, co-chairman
Dr. Wesley C. Wiksell, President of the NSSC and Professor of Speech, Louisiana State University, co-chairman
Dr. Thomas R. Lewis, Assistant Dean, Graduate School Florida State University
Dr. Robert M. Cavanagh, Director of Research, Explosives Department, E. I. duPont de Nemours & Company
Dr. Bess Sondel, Professorial Lecturer in Communication, University of Chicago
Dr. Curtis Mac Dougall, Professor, Medill School of Journalism, Northwestern University
Willard Bennett, Labor Relations Superintendent, Chairman, Committee on Training, Division of Refining, American Petroleum Institute
Dr. Edgar Dale, Professor of Education, Ohio State University
Dr. Wayne N. Thompson, Editor, The Journal of Communication, and Professor of Humanities, University of Illinois, Chicago

B. Immediate duties: Solicitation of critical reactions and preparation of a request to a foundation.

C. Long-range duties: Selection and supervision of the administrative persons and committees, including the conference chairman and the editor of the proceedings.

V. The request for financial assistance

A. The Steering Committee on or about May 15, 1960, shall make a final decision concerning the time and the place for the proposed conference. At the present time Elmhurst College is the only institution which has expressed an interest in holding the conference, but no final commitment between the NSSC and Elmhurst exists.

B. The request shall be submitted with the NSSC and the host college as co-sponsors.

C. The request shall seek funds to provide for (1) travel and all other necessary expenses for the speakers and the panelists and (2) the publication of the proceedings.

VI. Tentative plans for the program

A. Proposed theme: "Communication Theory in 1961: Present Status and Future Research Needs."

B. Proposed participants: Those persons in the various academic disciplines and in nonacademic pursuits who can (1) speak with the greatest authority concerning the status of communication research in their own fields and

(2) speak with the greatest insight concerning unsolved problems, hypotheses worth testing, and possibilities for future research.

C. Anticipated audience: The assumption is that a conference of this caliber would attract scholars from many geographic areas and diverse disciplines. The IICC might replace the regular annual conference of the NSSC and presumably would be supported by a substantial portion of the membership of that society.

VII. Tentative plans for time and place

A. June or August, 1961 -- a two-day meeting beginning on a Thursday and closing on a Friday.

B. Elmhurst College, Elmhurst, Illinois. This institution is a church-related college with an enrollment of approximately 800 students. Facilities include a new air conditioned building containing an auditorium-chapel seating 1000 and 10 large conference rooms suitable for sectional meetings and conferences for groups from 40 to 100. Dormitory facilities on the campus will house 350. Meals can be served cafeteria style for the same number. Hotel accomodations for those who prefer to stay in downtown Chicago are available at the La Salle Hotel. They may commute on the Chicago and Northwestern Railroad.

Elmhurst College is <u>located approximately fifteen miles directly west of downtown Chicago.</u> It is readily accessible by bus, suburban train, and private car. It has its own small airport and is closer to Chicago's O'Hare Field than is downtown Chicago itself.

CRITICAL REACTIONS TO THE PROPOSED FIRST INTERNATIONAL INTERDISCIPLINARY CONFERENCE ON COMMUNICATION

(Please return this not later than May 20 to Dr. Wesley Wiksell, Department of Speech, Louisiana State University, Baton Rouge, Louisiana.)

Name_____Professional address_____

Organization you represent_____

Position in that organization_____

I. General Reactions

A. To the need for such a conference:

B. To the tentative plans for the program:

C. To the role which my organization, my institution, or I would wish to assume in carrying forward the Conference:

(Note: One section of the request for funds from an educational foundation will list societies and individuals who will co-operate in the Conference. May we include your name? ( ) yes; ( ) no; that of your society ( ) yes; ( ) no. A second section will quote comments from scholars in various fields. May we quote the remarks you have written on these pages? ( ) yes; ( ) no.)

II. SPECIFIC REACTIONS

A. I recommend the following member of our society for the advisory committee, which will help plan the program (include his address):

B. I recommend the following persons as speakers or panelists:

C. I believe that the most appropriate length for the conference is _____ days.

D. I believe that the best time during the year for such a conference is (explain reasons):

E. My reaction to Elmhurst (a suburb of Chicago) as a place for the conference is (if you prefer some other location, please state your choice and explain):

F. My recommendations concerning the most valuable types of meeting are as follows (comment on relative values of lectures, symposia, round tables, open forums, debates, workships, etc.):

G. My recommendations concerning the request for funds from a foundation are (appropriateness of present plans? other budgetary items to include?):

H. Other comments (use another page if you so desire):

_____
(Signature)

May 12, 1960

Prof. E. R. Caianiello
c/o Prof. John Toll
Department of Physics
University of Maryland
College Park, Md.

Dear Prof. Caianiello:

Thank you for your kind letter of May 4.

I hope you will spend a few interesting weeks in this country, and I myself would be very glad if we would have a chance to meet and to discuss some of the problems in which we are both interested.

For my part, I wish it could be here at M.I.T., but as time may interfere with either your or my plans, it could also be in New York City. We shall be there on the 1st and 2nd of June, and shall sail for Sweden on the 3rd. If you should find it convenient to meet with us on one of the two dates, let me know, and we shall arrange for a place to get together.

With the best of wishes,

Sincerely yours,

Norbert Wiener

NW/emr

[ans 5/22/60]

May 12, 1960

Mr. W. E. Vannah
Secretary
American Automatic Control Council
330 West 42nd Street
New York 36, N.Y.

Dear Sir:

Thank you for sending us the Registration Cards for the IFAC Congress in Moscow so promptly.

Although matters seem to roll at least a little bit in the way of getting papers processed, there is the question of whether we have received all the information needed for this congress due to the fact that we got the invitation from Russia at a rather late date. Mr. Rufus Oldenburger has included Prof. Wiener in the list of US delegates, and as it appeared initially as if Prof. Wiener was going to be an individual member of the Congress, we feared that perhaps there might be some additional information with regard to the program, sight-seeing trips, lecture fees and other things that you might know more about.

Whatever information you have about the IFAC Congress, I should greatly appreciate having. Thanking you for your co-operation, I remain

Sincerely yours,

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

American Society for TECHNION-
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May 13, 1960

Dr. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Wiener:

The American Technion Society, which as you know is the American arm of the Technion-Israel Institute of Technology, is sponsoring its third annual "Conference on Science and Technology in Israel and the Middle East" scheduled to take place this fall.

This Conference will consist of a series of technical sessions at which eminent educators, scientists, United Nations experts, and engineers will present papers which relate to scientific and technological advancement the world over, and which can have special application to Israel and the Middle East. Science and technology can serve as instruments for the peaceful development of this strategic area of the world and I think you will agree that a Conference thus planned can have a far reaching favorable effect on the whole world.

It was an honor to inscribe your name as a Sponsor of our last Conference, which as you know was eminently successful, and it would indeed be a privilege to include your name once again among the group of leading educators, scientists, engineers and technicians who are sponsoring the Conference this year.

We are in high hope that you will give favorable consideration to this request and we look forward to your reply in the enclosed envelope.

Sincerely yours,

Benjamin Cooper

Benjamin Cooper
Chairman, Technological
Conference Committee

BC:hh
Enc.

[ans 5/17/60]

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May 13, 1960

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

Dear Professor Wiener:

I want to express my appreciation for your article in Science, 6 May 1960. Much of it fascinates me- much of it I hope to understand by rereading it several times. When I studied at Columbia over thirty years ago, Professor Bogert spoke whimsically about automation, and said that some day "push buttons" might give clues to the constitution of complex organic substances.

At our Laboratories, we use infra-red spectrometry to obtain such clues to the composition of perfume and flavor materials; perhaps some day taste and fragrance appeal may be measured by "push buttons".

With all Best Wishes,

Sincerely,
Victor G. Fourman
Research Division

Dr. V. G. Fourman:lk

THE INSTITUTE OF RADIO ENGINEERS, INC.

The Anniversary Issue will be the most ambitious and important publication endeavor that the IRE has ever attempted, devoted exclusively to major contributions by the highest authorities in our field. Its prompt and effective planning is necessary. We are therefore looking forward with keen anticipation to your early response, which should be sent to the Anniversary Editor at the above address.

Sincerely yours,

Ronald L. McFarlan

Ronald L. McFarlan
President

Alfred N. Goldsmith

ANG/al
cc: Dr. Julius A. Stratton

Alfred N. Goldsmith
Anniversary Editor

[ans 6/29/60]

THE INSTITUTE OF RADIO ENGINEERS
INCORPORATED
1 EAST 79 STREET
NEW YORK 21, N.Y.
LEHIGH 5-5100

May 13, 1960

DR. ALFRED N. GOLDSMITH,
ANNIVERSARY EDITOR

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

Dear Dr. Wiener:

In 1912, The Institute of Radio Engineers was founded. The year 1962, therefore, will mark its fiftieth anniversary, an event of unusual significance to the electronics and communications profession.

In honor of this unique occasion, the Board of Directors of the IRE has authorized the publication of an Anniversary Issue of the PROCEEDINGS OF THE IRE of a correspondingly special nature. In this issue a selected group of leaders in our profession will set forth the technical and historical evolution, present status, current trends, and research advances of the various major divisions of the communications and electronics field.

In view of the nature of this issue and of the occasion, the Board of Directors has asked the Editor Emeritus and co-founder of the IRE to serve as its Anniversary Editor.

It is our great privilege to inform you that the IRE Board of Directors, upon the recommendations of the Anniversary Editor, the IRE Editorial Board and the IRE Professional Groups, has awarded you the privilege and granted you the opportunity of serving as a spokesman for the field of Information Theory. You are accordingly officially invited to prepare a paper for the May, 1962 Anniversary Issue on the topic of "Future Theoretical Developments" (together with Dr. Claude E. Shannon of the Massachusetts Institute of Technology, who is to be your co-author.)

It is contemplated that your paper should be of approximately 2000 to 2500 words in length and that it should be completed by July 1, 1961. Further details will be forwarded to you promptly upon your acceptance of this invitation.

THE INSTITUTE OF RADIO ENGINEERS
INCORPORATED
1 EAST 79 STREET
NEW YORK 21, N.Y.
LEHIGH 5-5100

DR. ALFRED N. GOLDSMITH.
ANNIVERSARY EDITOR

May 13, 1960

Dr. Julius A. Stratton
President
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Dr. Stratton:

In 1912, The Institute of Radio Engineers was founded. The year 1962, therefore, will mark its fiftieth anniversary, an event of unusual significance to the electronics and communications profession.

In honor of this unique occasion, the IRE is planning an Anniversary Issue of the PROCEEDINGS OF THE IRE in May, 1962. This issue will be the most important publication endeavor ever attempted by the IRE. It will bring together a selected group of the leading authorities who will set forth the technical and historical evolution, present status, and current trends of the major divisions of the communications and electronics field.

I have the pleasure to inform you that the IRE Board of Directors, upon the recommendations of the Anniversary Editor, the IRE Editorial Board and the IRE Professional Groups, has bestowed on the following members of your organization the high honor of being chosen to prepare papers for this issue: Dr. Lan Jen Chu, Dr. William B. Davenport, Jr., Dr. Ernst A. Guillemin, Dr. Ben Lax, Dr. Claude E. Shannon, Dr. Norbert Wiener and Dr. Jerome B. Wiesner. In effect, this action is recognition by the IRE that they are leading spokesmen for their fields.

We know that you share our pleasure that they have been so honored and that, with your assent, they will be given whatever time and facilities are necessary for completing this important task.

Please accept my thanks and congratulations on the above selections as Anniversary Issue authors.

Sincerely yours,

ANG/al
cc: Dr. Lan Jen Chu, Dr. William B. Davenport, Jr., Dr. Ernst A. Guillemin, Dr. Ben Lax, Dr. Claude E. Shannon, Dr. Norbert Wiener and Dr. Jerome B. Wiesner

Alfred N. Goldsmith
Anniversary Editor

May 13,1960

Miss Joan Burczyk
Public Relations Asst.
American Society of Tool and Manufacturing Engineers
10700 Puritan Avenue
Detroit 38, Michigan

Dear Miss Burczyk:

One more favor I shall have to ask of you -- i.e., that you forward the enclosed ticket stub, which we could not find the other day, to the same department as the letter I sent to you, dated May 10.

I hope I haven't given you too much trouble and greatly appreciate all your helpfulness.

Sincerely yours,

Eva-Maria Ritter
Secretary to Prof. Wiener

enc.

[see 5/10/60]

May 13, 1960

Prof. Adolfo Portela
Anatomy Department
Emory University
Atlanta, Georgia

Dear Prof. Portela:

Thank you for your kind invitation to visit your University this month. However, as I am in the midst of preparing for my trip to Europe, and as I shall be leaving Boston on the 29th of May, I must regretfully decline.

Sincerely yours,

Norbert Wiener

NW/emr

Telegram to Prof. Wiener
from Atlanta, Georgia

Did you receive previous telegram?
Would welcome visit from you
prior to the 29th of May. Please
adorse date, time and flight
number of your arrival.

Signed:
Adolfo Portela
Emory University
Anatomy Dept.

for Profs. Wiener

HYDRO-ELECTRIC
DEVELOPMENTS
—
PLANNING
FINANCING
DESIGN
CONSTRUCTION

ADOLPH J. ACKERMAN
CONSULTING ENGINEER
1250 SHERMAN AVENUE
MADISON 3, WISCONSIN

MEMBER
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AMER. INST. OF
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ENGINEERS
A. S. C. E.
A. S. M. E.
A. I. E. E.

May 14, 1960

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

Dear Dr. Wiener:

I have just finished reading your new book "The Tempter" which came to my attention through an article in the Chicago Sunday Tribune by the Reverend Harold Blake Walker.

I feel persuaded to write to you for several reasons. First of all, I am a member of the Visiting Committee to the Civil Engineering Department of M.I.T. and, although I have never had the pleasure of meeting you, I feel greatly heartened to find your important philosophy emanating from M.I.T. Secondly, as a consulting engineer I have acquired a full appreciation of the insidious process by which compromises with fundamentals in engineering and ethics are leading to the gradual destruction of our American system of economics and government. During the past three years I have been serving on a Board of Consulting Engineers which has been studying the California Water Plan and, more specifically, a new water supply for the City of Los Angeles. Between the deliberate exploitation of the engineering profession through political pressures, on the one hand, and the serenity with which professional engineers are willing to compromise as a matter of momentary expediency without regard to the tremendous consequences of a harmful nature, on the other hand, the exploitation of technology in California is today's Exhibit C! (I wouldn't call it Exhibit A because I have been up against two more serious cases in recent years).

The California process is part of a leftist strategy which has been notably documented in Karl Wittfogel's "Oriental Despotism". I recently called this book to the attention of Dr. Killian and Dr. Stratton. That book, along with yours and two or three others, ought to be required reading for every engineering student.

Although I hesitate to burden you with further reading matter I am taking the liberty of sending you herewith some of the editorial comments and published items from California which you may find of interest.

Please accept my congratulations for the important contribution which you have made with your book "The Tempter". Your skillful setting of the time-scale and general introduction of the long-term influences which eventually lead to disastrous results make your book particularly effective. However, in view of the great pressures under which all of our professional men are working these days, the chances are that the majority of your readers will fail to study it and, as a consequence, will fail to recognize the importance of your contribution. However, I believe your book will grow in importance at the college level.

As a professional engineer I wish to express my gratitude to you.

Sincerely yours,

Adolph J. Ackerman

AJA:dms
Enclosures

[ans 7/28/60]

THE UNIVERSITY OF CHICAGO
CHICAGO 37 · ILLINOIS

COMMITTEE ON MATHEMATICAL BIOLOGY
5741 DREXEL AVENUE

May 14, 1960

Prof. Norbert Wiener
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Prof. Wiener,

I am taking the liberty of sending you the enclosed material in the hope that you might be interested in some work on perception and thinking based in part upon your observations concerning a Brownian motion representation in quantum mechanics.

A number of persons have commented upon certain general analogies between quantum processes and psychological processes, and some have ascribed the similarities to quantum mechanical processes in brain physiology. The presence or absence of such processes seemed irrelevant to me because they were on a different level from the psychological phenomena. It seemed like saying that radio programs are interesting because radio tubes are interesting. I felt that any similarities might arise because the quantum mechanical properties of interest came solely from the general mathematical formalism, and not from specific properties of matter, and such a formalism might apply to a totally different kind of system. The enclosed material shows what I am trying to do with this formalism, and I am sending it in the hope that you might enjoy looking at it.

The 1960 Western Joint Computer Conference paper contains most of what I can say about the perceptual model. The 1959 WJCC paper summarized a number of points which I felt were being overlooked by the audience addressed, although none of the points were original with me. You will of course see that none of the generalizations in the 1960 paper about properties of the quantum formalism are new either--what is, I believe, original is the attempted application to a number of psychological problems.

Initially I was trying to explain certain Gestalt phenomena which seemed analogous to some matters of pureness of states and perturbation properties of the Schrödinger equation, provided that the general formalism could be shown to be applicable. I tried to derive the formalism from arguments like those of Landé on the foundations of quantum mechanics. I gave a rather vague talk on the subject at the National Electronics conference, where I mentioned that nothing would work unless I could find a way to pick components with a probability proportional to their squared amplitudes. Walking home from the meeting I stopped at a bookstore where I chanced to find your book Nonlinear Problems

THE UNIVERSITY OF CHICAGO
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COMMITTEE ON MATHEMATICAL BIOLOGY
5741 DREXEL AVENUE

in Random Theory. There, right in the photograph on the dust jacket was the answer! So I rushed home, and in ten minutes or so after finishing the relevant chapter, I made a flow chart something like the one on the last page of the paper. This was intended just as a device which might be constructed to do a certain job, but with no other desirable properties. However, as soon as I looked at it I saw that it could be interpreted as resembling the Lorenz-Tinbergen theory of instinct, Freud's theory of thinking, parts of both drive-level and contiguity theories of learning, and a number of general characteristics of thinking related to the way in which ideas become gradually clearer and more crystallized as they come into the level of awareness, gaining in logical manipulability as they lose in richness of interconnections.

Some of the motivation for considering what properties might arise if information is represented as something like normal modes of oscillation came from generally being impressed by the way in which an animal reacts to his surroundings by fitting to the surroundings certain inherent patterns of activity which he can do. He does not seem to start with a homogeneous network upon which he depicts experiences; rather, experiences seem to excite certain inherent patterns, which are then reshaped to fit better. There is evidence of this throughout the animal kingdom, from action patterns in anemones, through instinctual behavior in general, to the way in which children draw shapes. For instance, according to Piaget, a child may start out by "drawing" a circle, square, and cross all as unintelligible scribbles. Later, he draws the circle and square using roundish swirling scrawls, and the cross using slashing scribbles. Later the swirls become sharpened into a somewhat circular outline for either circle or square. Next, the circle is still represented by a circular outline, while the square may be represented as in the picture. This is what you might expect, if the perceptual network has naturally occurring swirling and slashing modes all over it. These might be built in from the start, or they might arise from the passage of light over the retina during natural movements of the child. Then the circle and square are more likely to excite swirling modes than slashing modes, while the cross excites slashing modes. When the child has developed more sensitive discrimination, the next strongest component in the square--its straight lines and corners--excites the slashing modes, so he puts slashes in the picture. He putsthem close to the swirls, because he is sensitive to contiguity, but he does not integrate both modes into the same structure, as he must if he is accurately to represent the square. I wish I knew something sensible to say about the last step.

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COMMITTEE ON MATHEMATICAL BIOLOGY
5741 DREXEL AVENUE

Now the question is, "Does this model apply to anything?" The first question is where the orthonormal systems of the paper might come from. A trivial example might be given by two states of a simple switch. If switching is activated by some intrinsic activity level of the states and a randomly varying external source of energy, most of the requirements of the model might be met. Could such systems be combined into an interesting system satisfying the conditions of the model? Another possibility for the origin oforthonormal systems comes from Marcus Goodall's application to networks of some statistical ideas. Suppose that a network has several inputs and several outputs, and each output sends inhibitory connections to each incoming direct path in the net. Suppose that the strength of each such inhibitory pathway adjustsiitself so that the strength of the path from the jth output back to the ith direct path is proportional either (a) to the covariance of the jth output and ith input or (b) to this covariance divided by the variance of the jth output. In case (a) the output converges to some orthonormal set dependent in some way upon the input and the initial state of the net. In case (b) the network in the steady state transforms to the principal axis system of the covariance matrix of the inputs, and the feedback connections exhibit the eigenvectors of the covariance matrix, while the output variances give the eigenvalues. Such a transformation is, of course, well known to be useful in statistics, but the question is, whether it might be interesting perceptually--is a set of correlations a useful way in which to describe the world?...or to describe the world after a preliminary stage of information processing?

Another question is to find a natural interpretation of the need for the vector space to be complex.

In other words, I have no idea whether the model applies to anything, and I am trying to make identificationswith perceptual phenomena. The reason I am so greatly tempted to look for such identifications is that the formal properties seem to lead not just to simple behavior (such as conditioned reflexes), but to highly integrated behavior and higher mental functions. Therefore, I keep pursuing the slight chance that it will turn out to be meaningful, and have published the material in the hope that it would suggest some interesting ideas to someone.

I should be very pleased if you found the 1960 paper interesting enough to read, and of course I should welcome any comments you might have.

Sincerely,

Peter H. Greene

Peter H. Greene

[ans 6/29/30]

COLLEGE OF SAINT TERESA
WINONA, MINNESOTA

May 16, 1960

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

Dear Dr. Wiener:

We are enclosing a copy of the spring issue of our literary magazine, The Censer, in which we published an article concerning your work. We thought you would enjoy reading it.

Sincerely yours,

Margaret McCluskey
Margaret McCluskey
Editor

Enc.

[ans 7/5/60]

B

Cable

~~Have~~ sent applications for visa to Intourist here. ~~Time short.~~
They want trip pre-paid in full despite my funds in Russia. Leave Boston May 25. Time short. Can you simplify formalities?

Norbert Wiener

Sent 12 noon, May 17

THE INSTITUTE FOR ADVANCED STUDY
PRINCETON, NEW JERSEY

SCHOOL OF MATHEMATICS

May 17, 1960

Dear Professor Wiener,

Some time ago I wrote you from Berkeley that I planned to be in the East during this spring semester, and hoped to be able to visit Cambridge. I am coming up this Sunday evening, May 22nd, and plan to spend most of Monday at MIT on rather unpleasant departmental business (namely interviewing graduate students or others who may, in the future, wish to come to Berkeley to teach). I hope that I shall be able to meet you at least briefly sometime on Monday or on Tuesday (when I will primarily be doing the same thing at Harvard). I will come to your office on Monday morning to find out whether your schedule will allow me to talk with you during that time.

Dr. Masani may hage told you about the successful, though very informal meeting at Brown University recently, involving Masani, Lax, Lowedenslager and me, as well as some listeners. No actual progress was made, but we all learned a lot about each other's work.

Very sincerely,

Henry Helson

Henry Helson

May 17, 1960

Mr. Benjamin Cooper
Technological Conference Committee
American Technion Society
1000 Fifth Avenue
New York 28, N.Y.

Dear Mr. Cooper:

In behalf of Professor Wiener, I should like to thank you for the invitation extended to him to attend your third annual conference. However, as he will be in Europe during that time, he must regretfully decline.

Sincerely yours,

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

May 17, 1960

Mrs. Miriam T. Ellison
Best Articles & Stories
1757 Devon Lane
Bloomington, Ind.

Dear Mrs. Ellison:

Thank you for your interest in Prof. Wiener's article which recently appeared in SCIENCE. However, as it has already been published several times, Prof. Wiener feels that this time we should say "no". I hope you will understand.

Sincerely,

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

May 17, 1960

Mrs. Alice Mary Hilton
Associate Editor
ELECTRICAL MANUFACTURING
205 East 42nd Street
New York 17, N.Y.

Dear Mrs. Hilton:

Thank you for your letter and your very interesting article on "Logic and Switching Circuits" which you sent to Prof. Wiener.

Although he has not had much time to look at it, he was impressed by your tenacity in pursuing this kind of work and told me that you should be alerted for an article by Dr. Watanabe, which appeared in the IBM Journal of Research and Development, vol.4, no.2, April 1960, p.208.

As far as the proposal of your letter is concerned, I am afraid that at least for the rest of this year it is quite impossible for Professor Wiener to write an article for your magazine. He is leaving for Europe during the last week of May and will not be back until February-March of 1961, as he is going to lecture at various places on the Continent and is going to be a visiting lecturer for the fall semester at the University of Naples. Should he consent to do it after that, I will certainly let you know. I know that you are honestly concerned with the moral consequences of automation, and I believe so does Professor Wiener.

This is not supposed to be a polite "brush-off", but aimed at acquainting you with the fact that unfortunately it is not possible at the present to give your magazine an article.

Sincerely yours,

Eva-Maria Ritter
Secretary to Prof. Wiener

EMBASSY OF THE
UNION OF SOVIET SOCIALIST REPUBLICS
WASHINGTON 6, D. C.

May 18, 1960.

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

Dear Sir,

In reply to your letter we should like to inform you that all the details on your trip to the USSR you have to arrange with the Intourist agency in New York (355 Lexington Avenue, New York 16, N.Y.).

Sincerely yours,

N.Reznichenko
Chief, Consular Division

John Wiley & Sons, Inc.

NEW YORK LONDON

440 PARK AVENUE SOUTH
NEW YORK 16, N. Y.
MURRAY HILL 9-7630

MARKETING DIVISION
WARREN SULLIVAN
VICE-PRESIDENT
A. H. NEILLY, JR.
ASST. VICE-PRESIDENT

May 18, 1960

Professor Norbert Wiener
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Wiener:

Enclosed is a draft of our initial promotional plans, designed to launch your book to a successful start. Naturally, at this time the plans are only tentative, and may require adjustment due to change in publication date, or early journal closings.

At this time, we are unable to give you exact dates for circular mailings. However, the promotional material on your book will go as soon as possible after publication.

Your comments and criticisms will be welcome, should you wish to offer them.

Very sincerely yours,

Clotilda Lowell

Clotilda Lowell
Advertising Media Director

CL:pd
Enc.

[ans 5/27/60]

INITIAL PROMOTIONAL PLANS FOR WIENER

Cybernetics
2nd. Edn.

Direct-Mail Advertising:

We will send a 2pp, 8½ by 11, circular to 10,550 professors and instructors of Mathematics and Statistics, 6,850 professors and instructors of Physics, 4,825 professors and instructors of Electrical Engineering, and 5,600 professors and instructors of Biology. The circular will also be sent to 14,602 Physicists, 5,016 Mathematicians, and 33,179 Electrical Engineers. The book will also be included in group mailing pieces going to men in all phases of engineering, people in the social sciences, all the biological sciences, Mathematics and Statistics, and also Physics, at both the academic and professional levels.

As soon after publication as possible, Library File Cards will be sent to 854 Libraries in Liberal Arts Colleges, 198 Libraries in Schools of Technology, 1460 Foreign College Libraries, 1544 Foreign Bookstores, 1138 Foreign Libraries, 465 Foreign Societies, and the above mentioned professors and instructors of Mathematics and Statistics, Physics, and Electrical Engineering.

The book will be included in both editions of the Wiley Bulletin, which has a combined circulation of over 110,800.

Journal Advertising:

The book will be advertised in the April 1961 issue of Quarterly of Applied Mathematics; the spring 1961 issue of Journal of the American Statistical Association; the January 1961 issue of American Psychologist; the January issue of Journal of Chemical Education; the May 1961 issue of Library Journal; the spring 1961 issue of American Scientist; the December 1960 issue of Science; the April 1961 issue of American Mathematical Monthly; the January issue of Physics Today; the February issue of Review of Scientific Instruments; the March issue of Journal of Applied Physics; the spring 1961 issue of Physics in Canada; the January issue of Journal of Engineering Education; and Scientific American, as well as Electrical Engineering; the dates of which are still undetermined.

ИЗДАТЕЛЬСТВО
ИНОСТРАННОЙ ЛИТЕРАТУРЫ
СССР
Москва
№ 1-53/791 "18" мая 1960 г.

Уважаемый господин Винер,

Мы рады будем видеть Вас и Вашу супругу в Москве. Еще раз подтверждаем, что мы уплатим гонорар за издание на русском языке Вашей книги "Кибернетика и общество". Гонорар составляет сумму в 8000 рублей.

С уважением

Павел Чувиков
Директор Издательства

Массачусеттский технологический
Кмбридж 38, Массачусеттс

THE UNIVERSITY OF MINNESOTA
College of Science, Literature, and the Arts
Minneapolis 14

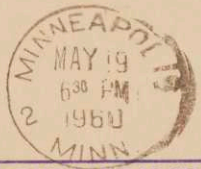
We have received your letter of recommendation for P. Hartman

Thank you very much for your letter and your kind words.

Bob.

Thank you for your assistance.

Robert H. Cameron, Chairman
Department of Mathematics



THIS SIDE OF CARD IS FOR ADDRESS

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

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF BIOLOGY
CAMBRIDGE 39, MASSACHUSETTS

Professor Francis O. Schmitt

Cable Address: Technology Cambridge

19 May 1960

Prof. Norbert Wiener
Room 2-276
M. I. T.

Dear Norbert:

The seminar lecture series on Physical Interactions in Aqueous Macromolecular Solutions has had a very strong impact not only on those of us with special interest in the field, but also on the students and colleagues in the Boston area generally. In reviewing the results of the program, we felt that because of the unusual apposition of lectures and the timeliness of the subject matter in the present stage of development of molecular biology and biophysics, it would be highly desirable to make some aspect available to others besides those who attended the lectures.

To that end we hope to obtain from each speaker a brief (ca. 500 words) abstract of the main points of his lecture. If references additional to those already furnished (a copy of your reference list is enclosed) should seem desirable, we would be glad to receive them. We hesitate to impose on you with this request, both because no previous commitment was made by you for such a write-up and because at this time of year people are usually very busy. However, you will perhaps agree that the interest which the material may stimulate is well worth the small additional effort. It is hoped that the assemblage of the material will be completed by June 15.

Upon receipt of the abstracts we propose to bring all the material with a short preface into one package, which will consist of ca. 75 pages. This is in lieu of publication of the

material, which would involve a great deal more effort and loss of time. We propose to publicize the availability of the material and, if separate funds can be obtained, we would hope to provide for furnishing the copies gratis or for a very small cost to anyone who applies.

Once more thanking you for the important part you played in our series and apologizing for this request, I am

Cordially yours,

Francis

Francis O. Schmitt

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WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

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198

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1960 MAY 20 PM 3 26

DUPLICATE OF TELEPHONED TELEGRAM

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PROF WIENER=

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=DBAG HAS MADE ADDITIONAL UNIT AVAILABLE 190 SEDAN DB-356 955 GREY LEATHERS. PLEASE CONTACT MR L RICHARDS MERCEDES-BENZ SALES INC. 430 PARK AVE NEW YORK NY PLAZA 1-7160. THANK YOU=

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THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

den 20. Mai 1960

Herrn Prof. R. Wagner
München
Pettenkoferstrasse 12
Germany

Sehr geehrter Herr Prof. Wagner,

Vor einigen Minuten wurde mir Ihr Telegramm an Herrn Prof. Wiener telephonisch mitgeteilt, und da ich weiss, dass Sie das Resume des Vortrages vor dem 31. Mai haben sollten, habe ich den kurzen Text, den mir Prof. Wiener vor seiner Wochenendreise nach New Hampshire diktiert hatte, sofort abgeschrieben und lege ihn diesem Brief bei.

Sollte er ein bissl dürftig sein oder einiger Verbesserungen in der Ausdrucksweise bedürfen, lassen Sie es mich sofort wissen und ich schicke Ihnen sofort ein verbessertes Exemplar.

Da Professor Wieners Abreise nach Europa unmittelbar bevorsteht, ist es wichtig, dass man sich auch mit der finanziellen Seite befasst, und ich möchte Sie daher bitten, uns, falls es Ihnen möglich ist, mitzuteilen, auf welche Art und Weise die Gesellschaft deutscher Ärzte und Naturforscher die Reisekosten Professor Wieners (wie ihm angeboten wurde) begleichen wird.

Ich wäre Ihnen für jegliche Hilfe sehr dankbar!

Mit vorzüglicher Hochachtung,

(Prof. Wiener's secretary)

ABSTRACT OF MY TALK BEFORE THE GESELLSCHAFT DEUTSCHER NATURFORSCHER UND AERZTE

Mein Vortrag wird sich mit Gehirnwellen-spektren befassen. Um diese zu berechnen, bildet man die Autocorrelationen der Wellen, und die gewonnen Spektren entsprechen genau den Interferenzfrangen, die man bei interferometrischen Messungen beobachtet.

In beiden Fällen wird das Spektrum aus der Fourierschen Transformierten der Interferenzfrangen berechnet. Gesetzt der Fall, der bei vielen Gehirnwellen auftritt, dass alle Frequenzen innerhalb eines engen Frequenzgebietes liegen, gibt es Methoden, die die Erzeugung der Fourierschen Transformierten erleichtern und die mit dem Prozess, der englisch "heterodyning" benannt wird, eine enge Beziehung haben.

Mit solchen Methoden erhält man bei den Spektren von Gehirnwellen unerwartet enge Spektrallinien und Spektralabsorption. Die Bedeutung dieser Linien, ihre Anwendung in der Medizin, und die Art und Weise, in der sie erzeugt werden, sollen eingehend betrachtet werden.

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

c/o Prof. J.S. Toll

UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS

May 22, 1950

Dear Prof. Wiener:

On arriving here I have found your kind note of May 12.

Much as I should like myself to visit you now at the M.I.T., what with getting settled and ready to work there and many other things interfering next week, I think the best for me will be to come to New York and see you there on June 2nd.

I expect therefore that you kindly let me know where and at what time, in that day, it will be convenient for you that I come and meet you - a thing towards which I am looking with great pleasure -

With best regards

Sincerely yours
F.R. Paiamitte

[ans 5/26/60]

276 Mass. Ave
Arlington

May 22

Professor Norbert Wiener
53 Cedar Road
Belmont

Dear Professor Wiener

You have participated in the panel discussion on a moratorium in Technology which was held in the Riesge Auditorium. The society for social responsibility in science is a groups of which you may have heard. Its current Newsletter issue for which I am responsible reviews, among other events, that evening (on page 2). You may wish to read the whole issue, and to comment on it.

Yours very truly

Herbert M. Meyer

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122

May 23, 1960

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

Dear Professor Wiener:

Many thanks for your letter of April 26. I quite agree with your point about the need for "awareness and fear" and of the wisdom expressed in the Latin hymn of Bernard of Clairvaux.

On behalf of my colleagues and myself, I should like to repeat our invitation to you to contribute an essay setting forth a proposal to prevent World War III. The gravity of the danger to civilization makes it all the more important that some of the best minds of the world turn their attention to this problem.

Sincerely yours,

William M. Evan

MH-122-WME-BR

William M. Evan

[ans 6/30/60]

May 23, 1960

The Gorham Hotel
136 West 55th Street
New York City

Gentlemen:

Professor and Mrs. Norbert Wiener intend to spend the nights of May 31, June 1 & 2 in New York, and they have asked me to request from you reservations for those dates, i.e., a room with twin beds (the type of bed they usually reserve).

I should appreciate it greatly if you would send me a confirmation. Thank you for your cooperation!

Sincerely yours,

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

DEPARTMENT OF SPEECH

THE UNIVERSITY OF OKLAHOMA

NORMAN · OKLAHOMA

May 24, 1960

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

Dear Professor Wiener:

Your work in cybernetics along with Shannon and Weaver's information theory has had a great influence, as you no doubt know, in behavioral science research, particularly in cognitive processes and small group behavior. My own interest in communication theory has led me to the study of your Cybernetics and Society: The Human Use of Human Beings in its nonmathematical version.

The broad interdisciplinary interest you have shown in human communication suggests that you would like to know about an interdisciplinary symposium we are planning at the University of Oklahoma. We plan to conduct "An Interdisciplinary Symposium in Verbal Communication" during 1960-61. The Society for the Investigation of Human Ecology has provided support for the initial planning. The Behavioral Sciences Division of the Air Force Office of Scientific Research invited us to submit a request for support of the symposium, and the proposal is now before that body.

A preliminary outline of the program is enclosed. We plan to invite about fifteen participants, all of whom have made distinguished contributions to research in speech, language, and communication processes, and who collectively represent a broad range of the arts and sciences.

The purpose of this letter is to secure your judgment of the possible value of such a symposium, your suggestions concerning the planning, and especially an expression of your interest in participation.

I recognize that your final commitment to a place in the symposium must wait on final approval of budget, date, and other details. You can see that I have a circular kind of planning problem which must be broken by knowledge of the interest and availability of potential participants. Frankly, Professor Wiener, an expression of interest in participation by you will do a great deal to help us secure the other participants we desire.

There are additional details in our preliminary plans. We expect to invite two representatives from not more than fifty universities as auditors, and to publish the symposium as a book. Each participant will have a free hand in the formulation and development of his own topic within the framework of the symposium. Muzafer Sherif, a distinguished social psychologist on our faculty, has served as an associate in the planning and has been invited to be a co-editor of the book.

If you feel an interest in participation, I should like to have a preliminary formulation of your preferred topic, and your reactions to the choice of other speakers, proposed topics, organization, length of the symposium, and most suitable date. We have thought that early in October 1960, or spring vacation 1961, or the middle of June 1961, might be best. What time would you suggest?

I am eager to receive your response to our plans.

Yours sincerely,

Jack Douglas

Jack Douglas
Professor

JD:as

Enclosure

An Interdisciplinary Symposium in Communication Theory

A prospectus of a symposium planned at the University of Oklahoma during the school year of 1960-61 with subsequent publication.

Preface

None of man's activities is so uniquely human as that of his communication, and none appears more significant to his condition and his potential. It is appropriate, therefore, that the study of language and communication should carry the strong interest in many disparate fields of learning which it now attracts. Full knowledge of communication processes will not be consummated without recourse to scholarly resources throughout the arts and sciences. Contributions to knowledge of communication processes have accumulated rapidly since World War II, but the chief contributors and their work remain even yet severely isolated from each other.

Purpose

The proposed symposium will be unique among scholarly symposia in its broad range of participation by leading scholars from all sections of the frontier in communication research. Its purpose is to provide for the sharing of concepts, theories, and findings which can reveal the gaps and discrepancies, integrate the disparate findings, open up new directions of fruitful research, and, hopefully, contribute to a more adequate theory of communication for interdisciplinary application.

Plan

Investigators regarded by their colleagues as major contributors to knowledge of human verbal communication are being invited to submit papers. Each will select and develop his topic according to his own conception, but will be requested to offer a theoretical formulation useful in the integration of knowledge in cognate disciplines as well as in his own. A preliminary list of topics and contributors is attached. The symposium is planned in four sections, presented over a period of three days, and limited to fifteen or fewer papers.

The plan includes distribution of symposium papers to the participants in advance of the meeting. Two representatives each from not more than fifty universities will be invited to participate as auditors and questioners. Questions and discussion will follow each paper and each section. These will be transcribed and edited for publication.

Program: Tentative Topics and Contributors

Communication as Physical and Biological Systems

(1) "Cybernetics in Human Communication," Norbert Wiener, Massachusetts Institute of Technology

(2) "The Neural Structure of Symbol Behavior," Wilder Penfield, McGill University

Communication as Symbol: Structure and Process

(3) "Language Structure and Human Behavior," Kenneth Pike, University of Michigan

(4) "Semiotic," Charles Morris, University of Florida

(5) "Semantics," Anatol Rapoport, University of Michigan

(6) "Poetic," Meyer Abrams, Cornell University

(7) "Rhetoric," Karl Wallace, University of Illinois

Communication as Behavior and Experience

(8) "Language and Cognition," Roger Brown, Massachusetts Institute of Technology

(9) "Verbal Behavior," B. F. Skinner, Harvard University

(10) "Pathology of Communication," Wendell Johnson, State University of Iowa

(11) "Communication Process and Personality Structure," Jurgen Ruesch, Stanford University

Communication as Social Structure and Process

(12) "The Communication of Ideas as Social History," Ernest Wrage, Northwestern University

(13) "The Analysis of Communicative Interaction," Robert Bales, Harvard University

(14) "Communication in Intergroup Relations," Muzafer Sherif, University of Oklahoma

(15) "Process and Effects of Mass Communication," Wilbur Schramm, Stanford University

John H. Schwarz
Lowell C-21
Harvard College
Cambridge 38, Mass.

May 24, 1960

Dear Professor Wiener,

As program chairman, I would like to ask if you would be so kind as to speak to the Eliot Club next Fall (e.g. December 4 or 11). It is a group comprised primarily of Harvard and Radcliffe students which meets at the Unitarian Church at 3 Church Street in Harvard Square.

We would greatly appreciate it if you would speak to us or lead a discussion for about an hour. I am sure that any topic you chose would be very interesting (non-technical).

Meetings are held on Sunday evenings at 7:00 for coffee and dessert, to which you are cordially invited, followed by the program at 7:30 and a short worship service to which you are also invited.

Would you please be so kind as to let me know whether any date in particular is convenient for you. After June 2 my address will be 8 Cross Lane, Glen Head, N.Y.

Sincerely yours,
John H. Schwarz

[aws 6/30/69]

SCIENCE
1515 MASSACHUSETTS AVENUE, N.W., WASHINGTON 5, D. C.

25 May 1960

Dear Dr. Wiener:

I am sending the enclosed letter from Dr. Gaw to you for your information.

Sincerely,

EDITOR

MAY 24 1960

EMIR ALLEN GAW, M. D.

507 "F" STREET
EUREKA, CALIFORNIA

23 May 1960

Dear Editor:

The paper of Weiner, Science 6 May 1960, leads to the picture of society as a sort of mammoth "machine". Into this we put data coded to our best calculations, and are likely to find that the machine plays better, ie. quicker, than we.

Very truly,

EAGaw

cc

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25th May, 1960.

Dear Sir,

With this letter we are enclosing a leaflet announcing publication (on May 26th) of a new novel called THE CROSSING POINT by Miss Gerda Charles, whose name you have probably seen over the past year in the 'Jewish Chronicle'.

This is the second of Miss Charles's novels, but we think you will be particularly interested in it because of its specifically Jewish theme and its setting in an Anglo-Jewish community in one of our big cities - not to mention its considerable literary merits as well.

At the same time as bringing THE CROSSING POINT to your notice we are taking the opportunity of mentioning four other books by Jewish writers - Bernard Malamud, Alexander Ramati and Robert Muller - that we have published recently and which we believe also to be worthy of your attention.

All of these books, (and Miss Charles's first novel THE TRUE VOICE) can be ordered on the order card enclosed, which should be sent to a bookseller.

Yours faithfully,
EYRE & SPOTTISWOODE (PUBLISHERS) LIMITED.

J.B. Friend.

May 25, 1960

Mr. Schindhelm
American Express Co.
378 Boylston Street
Boston, Mass.

Dear Mr. Schindhelm:

Enclosed I am sending you Professor Wiener's check of $100 to be applied to the travel expenses arising through the Intourist arrangements.

I would appreciate it greatly if you would be so kind as to send me a note stating that you have received the check.

Thank you for all your help!

Sincerely,

E.M. Ritter (Mrs.)
Secretary to Prof. Wiener

Check

May 25, 1960

President Julius A. Stratton
Room 3-208
Massachusetts Institute of Technology

Dear President Stratton:

Now that the period of my full employment at the Massachusetts Institute of Technology is drawing to a close (although owing to your kind assurances, my connection with the Institute is by no means at an end), let me again express to the Massachusetts Institute of Technology, and to you personally, the gratitude and pride which I feel at our long and close association.

Everything that I have been able to accomplish has been accomplished here at M.I.T., and a very essential part of it under your guidance and with your friendship. May I congratulate again you as the head of this great Institute and the Institute for many things, not the least of which is your presidency. Perhaps there is no other place at which I would have had the free chance to develop and grow intellectually and personally that I have found here.

In respect and friendship,

Your

Norbert Wiener

NW/emr

May 26, 1960

Prof. E. R. Caianiello
c/o Prof. John S. Toll
Department of Physics
University of Maryland
College Park, Md.

Dear Prof. Caianiello:

Prof. Wiener wishes me to thank you for your kind letter of May 22 and has asked me to tell you that he and Mrs. Wiener would be delighted to see you in New York on June 2nd.

They will be staying at the Gorham Hotel, 136 West 55th Street, New York 19, N.Y. The telephone at the hotel is CIrcle 5-1800.

Prof. and Mrs. Wiener would be very glad to have lunch with you -- let's say about 1 o'clock -- but if that should be inconvenient for you, I suggest you leave a message at the hotel desk or get in touch with Prof. or Mrs. Wiener by phone and arrange for a time more suitable for you.

I hope you will have a pleasant chat!

Sincerely yours,

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

May 26, 1960

Professor William Ted Martin
Room 2-251
M. I. T.

Dear Ted:

Now that one phase of our association (although not that association itself) is coming to an end, let me convey to you and to the Department my gratitude for the freedom I have been given, the support I have received and the privilege of working with you. We have known one another for a long time, and I could not wish to have done my work under better and more friendly auspices.

Margaret joins me in sending our regards to you and your wife.

Your old friend,

Norbert Wiener

NW/emr

May 27, 1960

Dr. Isaac Azimov
Medical School
Boston University
80 East Concord St.
Boston, Mass.

Dear Azimov:

I am enclosing a copy of an abstract of our proposed novel. Let me know how it seems to you. I had hoped to be able to get personally in touch with you before leaving for my 8-months trip to Europe, including Russia, but apparently it is too late.

I am sending another copy of my manuscript to Mr. Jason Epstein of Random House, and if you are interested, you can get in touch with him.

My itinerary is in the hands of my secretary, Mrs. Ritter, who will take care of forwarding my mail. I shall be back in January or February,and then we can really get together and work if it suits you.

I hope our plans will work. Whether they do or not, I am very grateful to you for the interest which you have taken in them.

With best wishes both from myself and from Peggy,

Your

Norbert Wiener

NW/emr

cc: Mr. J. Epstein

Enclosure

May 27, 1960

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

Dear Mr. DuShane:

The letter from Mr. Taube of which you have sent me a copy does not seem to me to need an immediate answer, and if it did, I am too busy with the preparations for my trip to Europe to give one. Perhaps I may find time on the boat to write a reply and if I do, I shall see that you get it promptly. Many thanks for sending me the material.

Sincerely yours,

Norbert Wiener

NW/emr

May 27, 1960

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

Dear Jason:

I shall be in New York May 31, June 1 and 2 and shall certainly get in touch with you before I sail on the third. Here is a copy of the abstract of the proposed novel. I am sending another copy to Dr. Azimov and told him to get in touch with you.

If you want to keep in touch with me on my trip, my secretary, Mrs. Ritter, is attending to the forwarding of my mail. Then until next week,

Cordially,

Norbert Wiener

NW/emr
Enclosure

May 27, 1960

Miss Clotilda Lowell
Advertising Media Director
John Wiley & Sons
440 Park Avenue South
New York 16, N.Y.

Dear Miss Lowell:

I am delighted with your plans for the promotion of my book. I hope it will be a big success for you people as well as for me.

Sincerely yours,

Norbert Wiener

NW/emr

May 27, 1960

Dr. Henry Allen Moe
551 Fifth Avenue
New York 17, N.Y.

Dear Moe:

Miss Beatrice Paipert, a sculptress who has done a bust of me some years ago, has asked me to recommend her for a Guggenheim fellowship. Outside of this bust she has done of me, I know rather little of her work, but she strikes me as a sincere and competent artist. More than this I am technically not able to say.

I am now going on a trip to Europe including Russia, and I will try to keep in touch with you during the next 8 months abroad. I again want to thank you for the long and pleasant relationship we have had.

Sincerely yours,

Norbert Wiener

NW/emr

May 27, 1960

Prof. B. N. Naumov
Secretary, USSR
National Committee of
Automatic Control
USSR Academy of Sciences
Moscow I-53
Kalanchevskaya ul. 15a
USSR

Dear Prof. Naumov:

Your very kind letter and telegram are in my hands, and I am looking forward most eagerly to my visit to Russia.

I shall get in touch with you when I arrive in Scandinavia and acquaint you more in detail with the plans of my trip.

Sincerely and gratefully yours,

Norbert Wiener

NW/emr

May 27, 1960

Miss Beatrice Paipert
10 Griggs Terrace
Brookline, Mass.

Dear Miss Paipert:

I have sent in a statement concerning your application to Mr. Henry Allen Moe of the Guggenheim Foundation. You will realize that this is rather off my beat and that you will have to depend primarily on recommendations of people who are better known as connoisseurs.

With all best wishes for your success.

Sincerely yours,

Norbert Wiener

NW/emr

le 27 mai 1960

Mme. C. Salomon-Bayet
Secretaire
Colloques Philosophiques de Royaumont
Secretariat
173 boulevard Saint-Germain
Paris 6, France

Madame et chere collegue:

Je suis tres honore a recevoir votre invitation a la seance du Centre Culturel de Royaumont du dimanche 18 au vendredi 23 septembre.

Malheureusement j'ai deja recu une invitation a faire une conference a Hanovre (Allemagne) le 22 au 28 septembre, et il me sera impossible a faire part.

En vous envoyant mes meilleurs souhaits pour le succes de votre conference, je me sousigne

Votre bien devoue,

Norbert Wiener

NW/emr

15 Bank Street
Princeton, New Jersey.
30th May 1960.

Dr. Norbert Wiener.
53 Cedar Road.
Belmont, 31.
Massachusetts.

Dear Dr Wiener:

I am writing to you to ask for information and advice. I have most urgent need for both in relation to a certain matter and I have suspected for a considerable time past that you were perhaps.

one of the few people who could understand the predicament in which I find myself and be able to help me.

I am sure you know that there is in existance a desire, probably electrical in character, which makes it possible for a person to speak directly into the mind of another person and to do this even though the person speaking and the person spoken to are far-away from each other.

By means of this device it is possible therefore practically to read the mind of another person. All the conversation of the person read may be available to the person reading and even their letters may be copied as they are written. The reading can be quite silent or can be accompanied by conversation between the reader and the person read. I believe many things may be done, electrically, by the reader to the person read

as for instance burns may
be inflicted on the person
being read and whom I may
therefore describe as a victim.
The victim will not know
who is reading and listening to
him and may have no recourse
to the police or legal officers since
the device in question has been
kept secret and is unknown
and unsuspected by the great
majority of people.

I am aware that this
situation makes it possible

to use a human being as
the object of experimentation
or at least of observation.
It is quite possible for a
group of experimenters to attempt
to make a project of the life
long reading of a particular
individual. I am sure I have
said more than enough to
enable you to realize what I am
talking about. (The reader may
do interfere with a person
writing a letter that mistakes in
diction and writing may occur)

The Federal Bureau of Investigation knows that this device exists but says that it is hampered by law to act only in certain stated and specific violations of law and may not concern itself with activities such as I speak of.

Will you please tell me what a person should do who finds himself in such circumstances? To what agency or to what governmental person or agency should he turn for help? How should he go about

making police or legal officers aware of this remarkable device and its equally remarkable Criminal misuse?

I am sure that I need hardly say how deeply grateful I shall be to you for any information or advice which you can give me. Please try and realize what such a situation may mean in practice and offer me help in meeting and overcoming it.

Sincerely yours
Albert Hofmann.

School of Electrical Engineering
Purdue University, Lafayette, Ind

May 30, 1960

Memo to: Richard Bellman
K. L. Chung
Bradford Dunham
T. C. Koopmans
Howard Raiffa
L. J. Savage
Norbert Wiener

From: Robert E. Machol

Subject: Information and Decision Processes Conference, April 12-14, 1961

Please forgive this multiple letter. As you all know, this is a rough time of year. The seven names above represent the seven speakers whose acceptances I have already received. In addition, I have some other invitations out, notably one to Kolmogorov (with approval of the State Department). I have expectations of having a final list of ten speakers in another month or two.

We have requested that the NSF sponsor this conference, so that we can avoid the high fee which was necessary last year and thus widen the possible audience to whom we might appeal. We are assured, however, of adequate financing through Purdue if it is necessary to charge the high fee again.

I will be in touch with you again in September, and at that time hope to obtain from each of you the title of your paper, and settle the exact day and time when each of you will speak.

You will be interested to know that the proceedings of our last symposium, which I edited, will be published next month by McGraw-Hill under the title "Information and Decision Processes".

If you have any questions of me, I shall be at the EE Dept., University of California, Berkeley 4, after June 20, and back at Purdue after Sept. 12.

Have a good summer!

R. E. Machol

Gesellschaft Deutscher Naturforscher und Ärzte

Der Generalsekretär
Prof. Dr. H. J. ANTWEILER

BONN 31.5.60

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Herrn
Professor Dr. N. Wiener
Department of Mathematics
Massachusetts Institute of Technology

Cambridge 39, Mass.

Sehr geehrter Herr Professor Wiener!

Darf ich Ihnen kurz auf einen Teil der Zeilen antworten, die Sie am 2o. Mai 196o an Herrn Professor Wagner gerichtet haben.

Die Gesellschaft Deutscher Naturforscher und Ärzte dankt Ihnen für Ihre freundliche Zusage, in Hannover einen Vortrag zu halten. Sie erstattet Hin- und Rückreise Cambridge-Hannover-Cambridge und trägt Ihre Aufenthaltskosten in Hannover. Es wird zweckmäßig sein, wenn Sie, sehr geehrter Herr Wiener, unserer Kassenstelle in Hannover eine Reisekostenaufstellung geben, so daß diese Reisekosten sofort erstattet werden können; die Aufenthaltskosten in Hannover gehen der Kassenstelle über die Rechnung des Hotels automatisch zu.

Mit freundlichen Grüßen

Ihr sehr ergebener

Hermann Schoen

Electrical Manufacturing *The Design Magazine of Science & Engineering*

A CONOVER-MAST PUBLICATION • 205 EAST 42ND STREET, NEW YORK 17, N.Y. • MURRAY HILL 9-3250

May 31, 1960

Miss Eva-Maria Ritter, Secretary
Professor Norbert Weiner
Massachusetts Institute of Technology
Cambridge 39, Mass.

Dear Miss Ritter:

Thank you very much for your letter of May 17, in which you give me Dr. Weiner's message. I am afraid that Dr. Weiner has probably left, by now, but if you have an opportunity to be in touch with him, would you please thank him for me for alerting me to Dr. Wantanabe's article in the IBM Journal of Research and Development, Vol. 4, No. 2, April 1960, page 208, which I have read. I shall take the matter up again upon Professor Weiner's return from Europe, and I hope that he will, at that time, be interested in writing an article for ELECTRICAL MANUFACTURING.

I am glad Dr. Weiner found my article "LOGIC - and Switching Circuits" interesting. The sequel to this article (Programming) will be published in the July issue. I am not sure that there is any particular reason for being impressed by my "tenacity in pursuing this kind of work." This is my career, for which I was educated, and it does not seem to me very extraordinary ~~for~~ to be working in one's specific discipline, but I do appreciate your kind words and Dr. Weiner's.

Sincerely,
ELECTRICAL MANUFACTURING

Alice Mary Hilton

Alice Mary Hilton
Associate Editor

AMH:bmd

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GORDON ALEXANDER SPEEDIE

22 Harvard Avenue, West Medford 56, Massachusetts • HUnter 3-3548

May 31, 1960

Dear Professor Weiner:

According to newspaper stories of this morning, we seem to have one basic point of agreement. While you express it differently than I do, we might find common ground in the use of the words of some american business men who say "Make big ones out of little ones," using these same words to say, "Make little ones out of big ONES."

On the basis of this concept, a periodic table of knowledge is possible, once we find a sound scientific method of placing mathematical values on words. While the paper enclosed is old, and while I have made many improvements in presentation since it was written, there are certain principles which merit its attention. You might take it to Russia, reading it when you can.

By starting with a big ONE as a universal, I have built a better set of universal terms than is possible, conventionally. This points to a need of a brotherhood of valued definitions as the first step toward a brotherhood of man.

Very truly yours,

Gordon Speedie.

Acknowledged July 29

Reprinted from MAIN CURRENTS in Modern Thought, November 1959

Speed Words

IN the Fall 1959 quarterly issue of *American Documentation,* Gordon Alexander Speedie has written an article on "Speed Words," in which he suggests that the flow of information through the printed word may be analyzed in much the same way as the flow of electricity. He makes an analogy between the dialectic field wherein ideas produce psychomotive force and the magnetic field wherein electromotive force is transmitted. The article is intended to formulate a conjecture which might be the subject of investigation.

The author defines a speed word as one which produces understanding in the least possible time. He intends, by this term, something more than the commonplace idea that short words invoke meaning more quickly than long ones. He rather proposes to discover the pattern of understanding which different words produce, by scientific analogy and experiment. Using the term "meaning time" to signify the rate at which words convey understanding, the author aims to introduce the time dimension. By recognizing common terms "for both systems, the potential of electromotive force called volt . . . could be one form of a common force called meaning, expressed in a short time interval. . . . In the dialectic system, psychomotive force, called meaning time, could be another form of the same force of meaning, expressed in longer time intervals. In this form it might be described as thought force or emoticity."

Mr. Speedie compares the flow of current to the flow of thought, and discusses the resistance encountered in both systems. He seeks to express the relationships in the dialectic field mathematically, basing his method upon analogy. The laws of an electric system work when in a circuit; the dialectic system may depend upon parallel laws, if terms are rightly selected. Thus, in the electric field, 1. amperes (flow of current) equal volts ("meaning time") divided by resistance; and 2. watts output (power consumed) equals volts ("meaning time") multiplied by amperes (flow of current). In the dialectic field this can be transformed as follows: 1. word frequency (flow of thought) equals "meaning time" divided by the resistance of the circuit (audience experience) and 2. word speed (thought consumed-understanding) equals "meaning time" multiplied by word frequency (flow of thought). In this case, word frequency is defined as the number of occurrences of a word per million words used by a stated audience, the average time per word for a million words being the equivalent of a time value. "Meaning time" is the actual time interval since a new form of meaning for a word began. Audience resistance uses the individual as a unit; one person using a word once a year has a resistance of one; twice a year, one-half, and so on.

Using these terms as factors, Mr. Speedie measures the speed of words with the equation:

$$WS = MT \times WF$$

where WS is the relative speed of a word in terms of its understandibility, MT is the meaning time in years of word use, and WF is the word frequency per million words used by a stated audience. (For the latter figure, the author cites as reference the indexes in *The Teachers Word Book,* by Thorndike and Lorge.)

Use of this method experimentally has brought Mr. Speedie to several conclusions: Certain words, such as father and water, are basically the same in many languages; the same thing is true of numbers. Also, as W. L. White has pointed out, changes which take place during the history of a language are regular and consistent enough to permit comparisons so that the earlier stages of language may be reconstructed. Obviously, variations in word speed, as well as other factors, suggest that all meaning is relative, and that the most lasting expression of relative meaning would be basic family words, and numbers. From this it would appear that "there may be as much meaning in a few dozen stable words, of greater meaning age than numbers, as there is in the numerical relationships of a few dozen digits in the decimal system," which supply the basis of the universal language of science, mathematics. In this way, the relative importance of many languages could be assessed, and the changing form of an even more basic or universal language might be revealed.

Obviously, a study of this kind has implications so far as communication and motivational research are concerned. Additional experiments may lead to a recognition that motivations hidden in the changing use of words are automated. As for communication, no matter how large and supple a vocabulary a writer may possess, he can communicate no better picture of his subject than his audience can understand. A scientific analysis of word speed could assist such a writer in choosing language whereby his audience would grasp his essential ideas most rapidly, yet it would allow him to retain his own style through flexibility of phrasing and imagery. At the same time, speed words might help to solve interdisciplinary problems, since they could lead to a more general acceptance of word usage to express scientific knowledge.

If the analogy can be pressed home, the author suggests, speed words would necessarily prove to be only part of a larger concept. This is that there may well be another non-material field which exerts governance upon action—a field of thought, above and yet related to known fields such as gravity, magnetism and electrostatics. If such a field were postulated and searched for a field constant and field units, language could, in a mean sense, become a field constant, and the relationship of ideas field units. —*S. J. Aylmer*

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SPEED WORDS

*GORDON ALEXANDER SPEEDIE**

ABSTRACT

"Speed Words" uses an analogy between the psychomotive force of the dialectic field and the electromotive force of the magnetic field to formulate a conjecture which might be the subject of investigation.

Using the term, "meaning time," which is explained, the paper introduces the time dimension as a function of word value. Accepted laws of an electric system are used to suggest parallel laws for the dialectic system. As a result, understanding speed of words is expressed by an equation $WS = MT \times WF$, where WS is the relative speed of a word in terms of its understandability, MT is the meaning time in years of word use, and WF is the word frequency per million words used by a stated audience.

Experimental use of this equation and method suggests that there may be as much meaning in a few dozen stable words, of greater meaning age than numbers, as there is in a few dozen digits in the decimal system — used as the basis of science and mathematics.

This could lead to revealing an even more basic or universal language. If these points can be stressed, speed words are then only part of a larger concept. There could be a field of thought above, and yet related, to known physical fields. If such a field is postulated and searched for its analogical equivalents, language could, in a mean sense, become the thought field constant, the relationship of ideas, field units; time, the field denominator.

(NOTE: A one-thousand word abstract, in advance of publication, appeared in the November, 1959, issue of *Main Currents* — by permission of *American Documentation.*

One writer says, "Short words have power." Another says, "Word choice is enormously important." I say, "Words can have different speeds of understanding." A writer writes, "Good writers almost automatically choose 'speed words,' if you want to use that term." The words "almost automatically" were crossed out, the words "tend to" inserted. "Tend to" has a "speed" about one hundred times faster than "almost automatically." I wonder if this writer would have used "tend to" if he had not heard of speed words?

I am guilty of the same habits. I write a paper. It is work to reread it for word choice. It is easy to think that ideas flow from mind to paper in neat and perfect word packages. But, weeks later, I see how speed words could improve it. I could use a device which would be my synthetic audience. It might be called a Copy Mechanic. With it, double space typed pages of copy could be fed into a machine. It would read, number, and underline each word which was either too slow for the understanding[1] speeds of my audience, or so precise and special that it should be double checked.

The machine would review my writing by printing, on another sheet, word numbers and lists of higher speed words, which might be better than the words underlined. In the case of so-called "precise" words, the machine would print the accepted definition. If not the perfect word, this definition check-up, would

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The author wishes to thank two groups of individuals: first, the many men and women who have read unusual advertising and received unusual experimental literature; second, the few represented by one man who, on reading this paper, said, "In general, your suggestion that the flow of information through the printed word might be analyzed in much the same way that the flow of electricity is analyzed, is a promising interdisciplinary project."

[1] Understanding is a higher speed word for a general audience. Comprehension, may be the higher speed word for the scientific audience.

lead the author to seek a better word. The best machines would do even more. They would read phrases after prepositions, underline and number recognized phrases. They would list colorful phrase variations according to the field in which the author is writing.

This silent assistant would never choose the word I should use. Rather, it would be of great value in combining the accuracy of a mechanical memory with an analysis of word speeds. By using it, authors could greatly increase the power in their words. Now, some who read this may say the man is dreaming. What machine could tell a speed word from a nonspeed word? What is a speed word? How does one define it? What is speed? Let us picture a communication.

A baby cries. Mother hears. A communication is complete. No word is used. A cry performs the function. It delivers a message, causes motivation. The cry is understandable. The mother gets a message. If we could measure the interval between hearing the cry and the mother's understanding, we might be able to measure the speed of this communication.

Now, if instead of a cry we start with a unit of a single word, we have an approach from which to develop the thesis of understanding speed. Since we propose to study the time it takes for a word to be understood, let us consider another field with a similar approach. The subject of motion and time study deals with physical motions. For example, R. M. Barnes, (2) lists motions used in writing (with the usual form of desk set pen) and gives time values in thousandths of a minute (converted to seconds to be comparable to the time value suggested for a syllable.) (Table 6, page 182.)

Steps used in writing	.001 Mins.	Seconds
1. Reaches for pen	10	.60
2. Grasps pen	3	.18
3. Carries pen to paper	8	.48
4. Positions pen for writing	3	.18
5. Writes	44	2.64
6. Returns pen to holder	9	.54
7. Inserts pen in holder	6	.36
8. Lets go of pen	1	.06
9. Moves hand to paper	9	.54

This table shows how a series of different motions can be time studied as parts of an operation cycle or circuit. When this research method is applied to words and thought study the concept can be exciting. We want to know what steps the mind takes as it prepares itself to understand a thought, how long it takes to return to normal. While it may be some time before we are ready to study all these details, an estimate of the time we take to think a single syllable could be of immediate use. A simple experiment tells us it usually takes from .1 to .4 seconds.

EXPERIMENT:

To perform this experiment, face a clock with a second hand, say "zero" and close your eyes as the second hand reads 60. Count one, two, three, four, five, six, seven, eight, nine, ten; one, two, three, four, five, six, seven, eight, nine, twenty and so on, and open your eyes at 300 to note the second hand. Use the same digits between each ten. You used 365 syllables. Divide 365 by the number of seconds elapsed to find your syllable thought speed. Having done this, you can perform other experiments to see how understanding speed may be different from thinking speed.

EXPERIMENT TWO:

Count 365 syllables in each of three pieces of copy. Try technical copy, magazine copy, and a piece by an old master. Read as quickly as full understanding allows you. Note reading time, in seconds, for each piece.

EXPERIMENT THREE:

Take the three pieces of copy in experiment two and change their sentence order. Then change their word order so the ideas of the copy are lost. Reread and note reading time, in seconds, for different sentence orders, and different word orders.

These experiments show that thinking speed and understanding speed may be different, possibly depending on the order of the ideas and the words.

These experiments suggest a preliminary conclusion. While we may not be able to say exactly how long it takes for each word to be understood, we might say that speed of understanding could be a useful and significant value. The problem would be how can understanding or comprehension speed be measured? How can we get into the minds of people so we can tell when they have understood a word? Can this be done?

To approach this problem let us consider a little known incident that suggests a direction for our search.

T. Joyce and R. M. Needham (4) referred recently to a paper published in 1945 entitled, "As Men May Think," by Dr. Vannevar Bush (3). They cited it as dating the start of certain literature in the field now known as *library science*.

The paper is mentioned here as a good example for word and thought study. In the paper, Doctor Bush coined and used the word *Memex* to picture a device for locating previously stored information, doing so by association. Doctor Bush said, "The paper was written about 1938." It was published after World War II in 1945.

By the gap of seven years, from 1938 to 1945, the paper seems to suggest that the idea may be the working force. Not only did it result in the release of the paper seven years after it was written, but it also caused a publisher to print it, and an audience to be motivated. When these separate actions are viewed as steps in the idea process, they present a sequence which suggests that ideas may have functional relationships.

In 1938, an idea was so well understood by Doctor Bush that he recorded it on paper. It was thus one man, one idea, and the one word which named it.

In 1945, the idea was published. Many men started to understand the idea and this gave meaning to the one word name.

In 1959, the idea has been working for fourteen years. Men have done things with their understanding of the idea. It can be said that men have been motivated. Other ideas are now related to this idea. There are many men, many ideas, and new words. There is still the same name for the original idea.

This sequence of functions suggests that increased use of an idea by others, after one man originates it, may be functions of the thought process, and may be said to be essential to the speed of understanding. They indicate that a study of this sequence might lead to knowledge about speeds of understanding.

The first approach to such a study seems to be by the use of analogy. By this method, an unknown field can be compared to a known field. If this twenty-one year example of the development of the Memex idea could be found to hold an analogy to a field of accepted science, such an analogous relationship could encourage further research, but first, there could be the question — what should we call this process by which ideas become words, words become things?

Webster in the United States and *Oxford* in England, define this field by the word *dialectic*. Others call it the *universe of thought*, the *thought realm* (British) and the *universe of discourse*. We call it *Emotronics*. (*R*)* Considering these five terms, the most used and most understandable seems to be Dialectic. In its oldest meaning, it is "the art of critical examination of truth." This means critical examination of a total philosophy and not a partial one.

When we accept this term and search the thinking of teachers of past centuries, we find extensive evidence of ancient use of analogy. Such logic from the past suggest that today's best analogy might be found in the most highly developed and best instrumented field. This suggests that a total dialectic might be analogous to electric field phenomenon (7).

A magnetic field, cut by loops of wire, produces electromotive force. If analogy is possible, a dialectic system should involve another

Table I

ELECTRIC FIELD	DIALECTIC FIELD
1. Electrons	1. Emotrons
2. in motion	2. in motion
3. create a magnetic field, and	3. create an idea field, and
4. when cut by loops of wore,	4. when cut by loops of thought,
5. at a rate of X loops per second	5. at a rate of X seconds per loop,
6. produce a change of potential (meaning) during each cycle.	6. produce a change of meaning (potential) during each cycle.
7. Within this cycle, which is a relatively short time interval, the unit of potential difference called a Volt,	7. Within this cycle, which is a relatively long time interval, the unit of potential difference called a Meaning Time,
8. is transformed by transformer-action from high voltage at low flow, called Amperage, to low voltage at high Amperes,	8. is transformed by communication action from meanings of long time, at low flow, called Word Frequency, to meanings of less time, at high Word Frequency,
9. and distributed by electric companies,	9. and distributed by publishers,
10. to user terminals,	10. to audiences,
11. where resistance of devices,	11. where resistance of readers,
12. causes it to change to energy as heat, light and motion.	12. causes it to change to energy as feelings, information and motivation.

[2] Servicemark registered in the U. S. Patent Office by Gordon Speedie.

kind of field, cut by loops of thought to produce psychomotive force. To test this thesis, it is assumed to be so, and imagination is used to develop the historical example of "Memex" into an analogy in table form.

By means of this table attention can be drawn to a significant and important relationship, this is the function of meaning time described at numeral 5. The rate of *X* loops per second involves a measure of time in each loop. The same measure applies where we refer to *X* seconds per loop. Both processes have this meaning time function, but the meaning is different.

By recognizing this common term for both systems, the potential of electromotive force called *volt*, after a man by this name, could be one form of a common force called meaning, expressed in a short time interval. In this form it is described as electricity. In the dialectic system, psychomotive force, called *meaning time* could be another form of the same force of meaning, expressed in longer time intervals. In this other form it might be described as thought force, a sort of unmeasurable electricity, or by some new word such as emotricity.

The amount of this flow called the *ampere*, after a man by this name, suggests another common term. The term *flow* applied to both fields, could mean flow of current in the electric field, flow of thought in the dialectic field.

Finally in each system, there is resistance. Here the same term applies to both systems. In the electric system, it is a defined term, indicating a unit of resistance called the *ohm*, after a man by this name. In the dialectic system, resistance is also defined. It is a measure of man's usage habits regarding words. Mathematically, it seems to be in the inverse of experience with the word. This is explained later under definitions.

When these terms are placed side by side, fundamentals of the two systems, suggest the following analogy:

Table II

ELECTRIC VALUES	DIALECTIC VALUES
Electromotive force in Volts (Meaning Time)	Psychomotive force in Meaning Time
Amperes (Flow of Current)	Word Frequency (Flow of Thought)
Resistance in the circuit (Ohms)	Resistance in the circuit (Experience)

A study of this analogy suggests that the use of common terms for these two fields could permit us to use well known laws to understand this less known field. When this approach is considered, these comparisons seem reasonable:

Accepted laws of the electric field are:

1. Amperes (flow of current) equals volts (*meaning time*) divided by the resistance of the circuit in ohms.
2. Watts output (power consumed) equals volts (*meaning time*) multiplied by amperes (flow of current).

These laws suggest that an electric field is a circuit, not only when potential is transformed as in step number 8, but also when the energy of step 12 produces thought for step 4 of the dialectic system.

They suggest that the two systems are parts of a total circuit which depends on parallel laws. Using this approach we postulate:

Proposed laws of a dialectic field as:

1. Word frequency (flow of thought) equals *meaning time* divided by the resistance of the circuit (audience experiences with the word).
2. *Word Speed* (thought consumed — understanding) equals *meaning time* multiplied by *word frequency* (flow of thought).

These postulates bring us back to the paper by Doctor Bush. It was published in 1945. It is now 1960. Memex has a Meaning Age of 15 years. Used in an audience with low resistance to its meaning, or to high experience with related words, *Memex* achieved a high frequency value. Thus it contained the motivation power with which T. Joyce and R. M. Needham (4) credited it. The same postulates suggest that words of less precision and many years meaning need to be used when motivation power is desired from an audience whose resistance is greater because its experience with such words is less. The postulates and the example suggest that there is logic in the analogy. The dialectic system should be studied by seeking definitions of the terms: *word frequency*, *meaning age*, *audience resistance*.

Word Frequency has long been known. It is defined, for purposes of this paper, as the number of occurrences of the word per million

words used by a stated audience. The million word denominator is used instead of a time value, which would be the correct procedure. It seems reasonable to use average time per word for a million words as the equivalent of a time value. When counting words, the count is also used as a device to relate time, to represent word occurrences per unit period.

Meaning Time is a new term. It is the actual time interval since a new form of meaning began. For a word, this can be a change of spelling or a change of meaning. Such a change, in the year 1960 for example, would give a word a *meaning time* of 1,000 calendar years.

Audience Resistance is the most difficult of the three. It is also a new term. It is influenced by such factors as associations, experiences, reactions, and capacity to understand. Its unit is the individual. One person using a word once a year has a resistance of one. He may have to look up the word, think about it, or disregard it. His lack of experience is shown as higher resistance.

Now, if he uses the word twice a year, his resistance is one-half, four times a year, his resistance is one-quarter, and so on. It would be quite a project to keep track of audience resistance if it had to be measured on an individual basis. Fortunately, it does not. In fact, in the first uses of these postulates, the first "law" is the least used. The second "law" is the most used. When this is done, *word frequency* is taken directly from the number of appearances or occurrences of the particular word per million words used. This provides the needed information without using the basic parallel between the number one law in the electric field and the number one law in this dialectic field. The parallel between the two is interesting, however, since it serves as further confirmation of the strength and validity of the analogy.

Now let us see how we can use what we have developed.

In electricity, we measure the power consumed by an electric lamp in watts. We buy a light bulb of 40, 60, 100 or more watts, because this figure is a good guide to the amount of light we will get from the bulb. Measure of the actual amount of light will depend on the efficiency of the bulb as well as the power consumed, just as a measure of the amount of meaning will depend on the attention of the audience as well as their understanding of the words. For a simple analogy we can consider that the bulb has average efficiency much like an audience has average attention.

We can consider that the watts output figure is a good estimate of its usefulness. This is found by multiplying the volts at which the bulb operates by the amperes of the current it uses. We can use a similar procedure in this field of dialectics. We multiply *meaning time* by *word frequency* to get relative understandability.

Thus we begin to measure the speeds of the words we buy. And, since measurements are made from recorded and measurable data, machines and equipment can be developed to help writers. The device called a *Copy Mechanic* will be able to read each word, check its speed, and underline words too slow for the audience. Choosing faster alternates will be the writer's job.

These developments may be summarized in the *word speed equation.* It presents a second dialectic law in equation form as it suggests that *meaning time* is a function of word speed. This may be expressed as a straight proportion for experimental use, as:

$$WS = MT \times WF$$

Here WS is the relative speed of a word in terms of its idea understandability, *MT* is the meaning time in years of the specific meaning of the word and *WF* is the word frequency per million words used by a stated audience.

Using this equation, each word in the dictionary can be given a speed rating. For example, we can use the dates of new meanings given in the *Oxford English Dictionary* (6). We use the word frequency data for words counted in the *Saturday Evening Post*, the *Ladies Home Journal*, *Woman's Home Companion*, *True Story* and *Reader's Digest*, mostly in the 1930's. These were published in *The Teachers Word Book of 30,000 Words* by Thorndike & Lorge (7). When computed according to the equation, sample words give values as follows. The word "I" has a speed of 110. Most words have speeds of less than 1.0, for example; *additional*, .024; *arrange*, .0516; *benign*, .011; *cogitate*, .0047; *duration*, .016; *fabricate*, .004; *order*, .942; *present*, (noun) .707.

These speeds can be called speeds for a definable American audience. They are computed from the dates of first use or present spelling of English meanings of these words.

This provides for words where meaning has been the same and the change has been in the spelling. This point is made by W. L. White (9),

when describing the law of language worked out by the brilliant German, Jacob Grimm. He and other scholars showed that changes which take place during the history of a language are regular and consistent enough to permit comparisons between languages by which to reconstruct the earlier stages of language.

This law explains why such words as *father* and *water* made only slight changes in their form as they appeared in different languages. The same is true of numbers. Meaning has been the same in each language, the word itself changing with the movements of people.

Because of these changes, *meaning time* measures only the exact spelling and the particular meaning. In this way, it keeps its value consistent with the current period of both the history and the usage of the language.

It can, however, apply equally to the older meanings of the word when comparing speeds in other languages. Because of this, the word speed law and the law of Grimm, suggest that all meaning is relative. For the most lasting expression of relative meaning, basic words would first be those important to the family and second, those known as numbers.

In one sense, this explains the modern importance of science. It uses a method of building logic based on meanings which have been unchanged for centuries. In another sense, this shows that the science of numerical relations may not be the only approach. Man could build as firm a foundation for thought using a few dozen stable words, of greater meaning age than numbers, as he may be doing with the numerical relationships of a few dozen digits of the decimal system.

Thus, there can be many languages, all having equally relative importance. It would be like saying that there are as many speed words in each field, for the members of their field as there are in all fields for a total audience. Thus, one could say each field has its own language. By applying Grimm's law, this would suggest that changes in the language of the electric field and the dialectic field would be consistent enough to be comparable. They could, if studied, reveal the changing form of an even more basic or universal language.

But what about words of similar meaning? Assume you had ideas to express where either the word in Column I or the word in Column II could be used. In such cases the word in Column I would be the faster word, usually the better one to use. In the list, *like* has a speed 1.9 times faster than *love*. *Make* has a speed 1710 times faster than *fabricate*. Write your guess for the remaining words, then check with the answers at the end of the article. (Note A)

Column I	Column II	Column III (Number of times word in Column I expresses idea faster than the word in Column II)
Like	Love	1.9
Make	Fabricate	1710.0
Much	Largely	_____
Time	Duration	_____
I	Myself	_____
Think	Cogitate	_____
Now	Present	_____
Good	Benign	_____
More	Additional	_____
Order	Arrange	_____

Remember, this applies only when you can use either word. This often happens. According to Mortimer J. Adler, there may be a good reason for this. He lists "THE 102 IDEAS." (1) By his list he suggests that all ideas reduce to 102 basic ideas. Even if this were only a study of idea relationships, it is evident that there must be many ways of expressing similar ideas. Thus, ideas expressed with words having high speeds of understandability could motivate more people.

After this presentation, two questions can be asked: (1) What possible future can there be for this method of analysis of the flow of information through the printed word? (2) What can speed words do for business today?

For the best answers to these questions, we may have to await the natural process by which ideas grow, but, for a preliminary word picture of the future, we may extrapolate as follows:

First, let us consider the background against which we would try to answer question one. Our economic world has grown to become one where automated facilities can now produce almost anything which can be sold. The bottleneck of greater production is now the bottleneck of greater consumption. From a grass roots policy of "waste not, want not" the economy has been shifting toward a promotion policy of "waste wisely, want better."

This can be good, if wisdom works to govern it, and, in a sense, motivation experts and communications scientists are performing a sort of wisdom research of these problems. Their depth studies and searches for the hidden forces by which humanity is moved, may be called an essentially economic approach to basic truth.

In this sense, it might be said that there are two distinctly different approaches. One might describe the motivation and communications science as the study of *how* truth operates. One could suggest that the physical sciences study *what* truth is.

Said another way, the study of *how* is like a study of management. It is concerned more with the functions of an operation than with the names of the parts. Using this picture, it may be said that the motivation and communication sciences are searching for the *how* equation. If this equation applies universally to each word, each idea and each and every expression, then a word by word analysis of information flow could contribute as much to understanding the relativity of management systems as a property by property analysis of particle mechanics is contributing to understanding the relativity of physical systems. In its fullest extrapolation, the final perfect description of universal management functions would seem to be simply related to an equally final and perfect description of the particles and properties of universal physical systems.

With this development may come the recognition that motivations hidden in the changing uses of words are as automated as automation itself, and that all management systems, like all physical systems are both scientific and relative.

Now, back to the more immediate applications of this approach. Consider the second question, as to what speed words can do today.

Consider the field of communications. The scholar of our time is measured in a general sense, by the size of his vocabulary. He is like an extremely excellent optical lens. He can focus on any subject and use his large vocabulary to transmit a detailed picture to a film in a camera, or to an audience, as in the case of words. How much of this detail he communicates, as in the camera, depends on the audience. As the lens can produce no better picture than the film can develop, so the great vocabulary can communicate no better picture than the audience can understand. In this word speeds will be a great help. Men with wonderful vocabularies and complex ideas will be able to look for synonyms of higher speed value for the audience to be reached. Men who do not have the skill of Doctor Bush, in the art of shifting thought gears for different audiences, will have a scientific approach to serve and guide them.

While it will still be true that the writer makes the final choice of words, it will nevertheless, lead to faster, better communication as writers accustom themselves to the value ranges of different synonyms and methods of idea phrasing. Communications between fields will improve as improvement brings to light new opportunities in the fields themselves. Speed words may start by solving interdisciplinary problems as they lead to a broadening of scientific thought and to areas for science, not even dreamed of today.

In particular, speed words are an initial demonstration of a larger subject. They are one practical application of a larger idea. The author was on the receiving end of a potentially more significant concept. Speed words were the first practical, commercial application in which the idea could be used.

The larger idea is called *Speed Ideas*. It is the result of ideas indicating that there may be another *field*, a *thought field*, which is above, and yet related to, the known fields of gravity, magnetism, and electrostatics.

It is the imaginative understanding of a system by which ideas operate at different speeds to change speeds of word understandability. Different thought orders and different idea meanings seem to give words speeds which may be hundreds of times their normal value. This idea has been easier to use than to explain, but for those who wish to try to understand, the briefest presentation may help.

Meaning is defined as an intangible value, made imaginatively tangible by relating it inversely to motion. Where motion is distance divided by time, meaning may be imagined as the difficult biological-physical-analogical concept of time divided by distance.

In the field equations for gravitation, magnetism, and electrostatics, force and distance are found to be common values. Force, in each field, equals its field constant multiplied by the product of its field units, divided by the square of the distance between the field units. While each field is dimensionally different from each other field, all use the common denominator of distance. Since distance is the numerator of motion, it seems logical to assume that if time can be imagined as the numerator of meaning, then time would be and is the denominator of a thought field and the equations of such a field.

When this is accepted and an imaginary thought field is searched for a field constant and field units, the speed of words, in a mean

sense, become a field constant, the relationships of ideas become field units. These values suggest an approach by which this new kind of research may be advanced.

For most readers, applications of a thought field equation have more to offer than explanations. At this writing, they are mostly experimental and based on a field constant to represent an audience *mean* value. This was developed by taking the values of those few, most used words, which represented half of an audience's total word usage. In one list this totalled eighty words, in another, made of the words of a great teacher of centuries ago, this was only forty words.

As an experiment suggested by the constant and the equation, other peoples' ideas were rewritten using more of these most used words than they used themselves. Before and after comparisons showed that such changes, if made with due regard for meanings, introduced into the communication greater apparent understanding and thus greater thought force. This sort of correlation suggested that simple meaningful words have values for research. Such values might be so important they could be evident in their long-term accumulated effect on mental and physical health, for example, a kindergarten teacher might live longer than a technical engineer. With experiments pointing to such possibilities, one might read the following statement in a government report more than once. (9) "The death rates for semiskilled workers are lower than the skilled, clerical, and sales workers after age 55."

Such observations seemed to be good reason to try the unusual. Using a selected vocabulary with values approaching the field constant, advertising and direct mail was used to experiment with some abstract ideas. The results of such tests seemed to correlate with the equation. Response seemed to vary as the square of the timeliness of the abstract idea in terms of the experience of the reader. Because of such experiments, a few predictions of what may be coming, may be in order. New services for business and industry needing equipment and skilled operators may be available within a few years. Some of these follow:

1. *Audience Vocabulary Studies*
   Mechanical reading of copy to determine audience vocabularies and changing word trends can help publishers plan their programs.
2. *Publisher and Speaker Word Analysis*
   A *Copy Mechanic* on a contract service basis, can read speeches, articles, and books as an author's word suggestion service. It will do this in a small portion of the time the author used to write his work. It can save an author's time and thus become a competitive must.
3. *Competition Word Studies*
   Vocabulary and key word studies may be used by industry to bring to executive attention changes planned by competition and discovered by computer analysis of words in circulation.
4. *Political Polls*
   Polls of changing word habits and the use of key phrases may reflect true reactions and be the source of new political fortunes.
5. *Copy Mechanics*
   Newspapers and publishers may keep such devices available for their writers. Work has already been started on a book called *The Book of Speed Words*. It will be a quick reference work with a mathematical notation after each word, to show understanding speed.
6. *Integrated Thought Systems for Education*
   A table of interdiscipline knowledge can relate laws of numerically great importance. Students developing understanding and confidence in a particular field will require less time to understand instruction and accept systems of laws in other fields. The table which may be somewhat similar to a periodic table in chemistry, can provide for the integration of the thought and systems of many disciplines.

These services could develop quickly. *The Book of Speed Words* and the first *Copy Mechanic* could demonstrate their values, give pioneers advantages and thus stimulate a new area for industry with a large potential market and users all over the world.

When these services do reach business, I hope the Memex device of Doctor Bush is available. Imagine the thought force that could develop in this *Thought Field of Dialectics*, when authors, retrieving information at high speeds, by association, can present new ideas in high speed words valued by mechanical audience synthesis.

BIBLIOGRAPHY

1. Mortimer J. Adler, "What is an Idea?," *Saturday Review*,(Nov. 22, 1958).
2. Ralph Mosser Barnes, *Motion and Time Study*, 4th Edition. New York: John Wiley & Sons, p. 182.
3. Vannevar Bush, "As We May Think," *Atlantic Monthly*, v. 176 (July, 1945).
4. T. Joyce and R. M. Needham, "The Thesaurus Approach to Information Retrieval," *American Documentation*, v. 9 (July, 1958), p. 192-197.
5. I. M. Moriyanna and L. Guralniek, *Occupational and Social Class Differences in Mortality*, National Office of Vital Statistics, Public Health Service, Department of Health, Education and Welfare. (Page 67)
6. *Oxford English Dictionary*, Oxford: Clarendon Press.
7. Gordon Speedie, "Review of the *Creative Word*," *The Philosopher*, Journal of the Philosophical Society of England (Spring 1959 issue) 33-36, "The Creative Word," (Midsummer 1958 issue) 42-74.
8. Edward L. Thorndike and Irving Lorge, *The Teacher's Word Book of 30,000 Words*. New York: Teachers College, Columbia University. 1944. (Figures used from tables).
9. William L. White, "Words, Our Most Ancient Legacy," *Reader's Digest* (November 1958), p. 130. (Condensed from *The Saturday Review*, Oct. 4, 1958).

NOTE A. The speeds of comprehension of the words listed show that Column II words are faster than Column I words, as follows:*

Much 3, I 42, Now 12, More 355, Time 570, Think 1230, Good 536, Order 18.

*Computed from data published in 1944. New data would change speeds slightly but not the principles involved.