

*Tr. into Apr 60, Fac Talks to
c/R Fac Panofsky*

Remarks of Prof. Panofsky (April 1, 1960)

Mr. Chairman, Gentlemen of the Board:

The report of the Joint Trustee and Faculty Committee has set forth the limitations and possibilities which distinguish our School of Historical Studies from our School of Mathematics, on the one hand, and from a comparable agglomeration of university departments, on the other.

I.

Counting only the full-time permanent members of professorial rank, our School has at present nine professors, their number soon to be reduced to eight by the retirement of Professor Woodward; the School of Mathematics has thirteen professors plus the Director.

This means, first, that the School of Historical Studies is less than three-quarters as strong as the School of Mathematics (as far as temporary members are concerned, the ratio is even one to four rather than three to four); second, that it comprises only a fraction of the number of full professors engaged in comparable pursuits in any major university (whereas the number of our mathematicians and theoretical physicists at least equals, probably exceeds, what corresponds to it at, say, Princeton or Harvard or Yale).

In contrast to the School of Mathematics, then, our School is both much smaller in numbers yet much wider in scope and, consequently, much less coherent in subject matter. A radical solution of this problem is manifestly impossible and, as a matter of fact, undesirable. It would either require an unfeasible multiplication of subjects so as to achieve a "complete

-2-

coverage" of what is usually called the humanities; or ^{the} ~~we~~ ^{ment of} appoint only classicists, only historians or only palaeographers.

The Trustee-Faculty Committee therefore suggested that the subjects to be cultivated by our School be confined to the historical exploration of a culture rooted in what may be called, in a general way, the Graeco-Roman tradition. This limitation excludes certain disciplines because they are outside the boundaries just mentioned and others because they presuppose methods other than historical; but even within this limited framework a perfectly "balanced" program cannot be achieved, and I believe that the selection of members should be dominated by the qualifications of individual scholars rather than by the desirability of individual subjects. For, problematic though our situation is in many ways, it can be saved, and has been saved thus far, by the absence of all those pressures which may be summed up under the sobriquet: "The Spectre of Completeness." Since we have no set courses of instruction, no students and no alumni, we are not forced to put the curriculum before the horse but are free to concentrate on the horse.

Of late there has arisen a tendency to give priority, so to speak, to certain specified fields of study deemed to be desirable for substantive reasons. It has been argued that outstanding personalities can be found in these fields as well as in others so that, in theory, no real dilemma seems to be involved. In practice, however, the "desirable" subjects have not been shown to produce desirable additions to our faculty. As a result, the concentration of the search for suitable candidates upon one pre-determined field has already caused much delay in filling the vacancy produced by the impending retirement of Professor Woodward; if continued, such a concentration might even lead, if we are not careful, to a compromise with quality.

This does not mean that we should not strive for a certain coherence within the School. But it does mean that, in my opinion, this coherence can be more effectively achieved by maintaining a community of standards, tradition and outlook (difficult to define but perhaps describable as "humanistic") than by an attempt to "fill gaps" in subject matter. This community of standards, tradition and outlook may even operate - and often does operate - as a unifying force in the relation between the two Schools: when it comes to essentials a historian may have more in common with a mathematician or physicist than with another historian, and vice versa.

II.

One of the reasons, perhaps the chief reason, for the wish to give priority to such less "recondite" subjects as, for example, American history seems to be the feeling that our School is not sufficiently integrated with, or does not have sufficient impact upon, American academic life in general. Here, I think, we must ask ourselves: "What kind of impact can we hope for and should we aim at"? I believe, first, that this impact cannot be measured in numbers but only in intensity; second, that it cannot be instantaneous but may be compared to the effects of a delayed action bomb or, pace the nuclear physicists, of a chain reaction; third, that it cannot be stimulated, much less produced, by an organized effort but depends, in the first place, on the Grace of God and good luck and, in the second place, on personal achievement and reasonably good judgment in the selection of collaborators.

Permit me to illustrate points two and three by concrete examples and to take up point three first. A professor in Pennsylvania, engaged in excavations in Greece, recently found a memorial stone with a very damaged and half-effaced inscription of which he, not being a specialist in Greek epigraphy, could hardly read more than the name Themistocles. The only

-4-

place for him to go was our Institute, the stamping-ground of Benjamin Meritt who, in spite of his personal modesty, has perhaps a greater impact on classical studies all over the world than any other scholar alive. Benjamin Meritt succeeded in decoding and reconstructing the inscription; but even he needed the help of a professor of Greek history from Oxford who, on his suggestion, is a temporary member at the Institute this year. Result: the recovery of a famous decree of Themistocles, referred to by Herodotus and I don't know how many other ancient historians but thus far not available in the original. A thing like this, I submit, can happen only at our Institute as constituted at present.

To illustrate point two (the possibility of a chain reaction) I may refer, setting modesty aside, to my own little domain, the history of art. In the nature of things American art historians tend to spend their sabbaticals abroad while Europeans welcome a stay in this country. In my field the percentage of European members has therefore always been exceptionally high, and their list includes scholars - among them the most prominent now active - from many different countries: England, Germany, France, Italy, Belgium, Holland, and Sweden. But even so I can name no less than five cases in which art historians have achieved the status of full professor and head of department in American universities exclusively or preponderantly on the strength of research accomplished during their membership at the Institute: Professor Robb (Pennsylvania University); Professor Forsyth (Michigan University); Professor Ladner (Fordham University); Professor Katzenellenbogen (Johns Hopkins University, where no department of the history of art existed before him); and Professor Lee (Princeton University).

In addition to doing the tangible work which earned them their positions, these scholars (and I do not mention many others who came here without needing promotion) absorbed much of those imponderables which make

-5-

for a tradition. They impart this tradition to their associates and their students, and these in turn will pass it on to future generations. This is what I mean by "chain reaction," and I believe that this is the best way in which the Institute can contribute and, let us hope, will continue to contribute, to American academic life at large.

III.

This leads me, in conclusion, to a practical problem peculiar to my field. By the appointment of Millard Meiss, you, Gentlemen of the Board, have fortunately assured the continuance of art historical studies at the Institute, and I can say, with old Simeon: "Oh Lord, now lettest Thou Thy servant depart in peace." But in one respect the situation in the history of art is unique and somewhat precarious.

From the outset it was wisely decided that the Institute could not and should not attempt to duplicate the splendid art library (known as "Marquand Library") of the Department of Art and Archaeology at Princeton University, perhaps the best in the country. Even had we been able and willing to spend a million dollars on art books it would have been impossible to achieve anything comparable to Marquand Library because countless works of prime importance - particularly the source books of the sixteenth, seventeenth and eighteenth centuries and the back issues of such leading periodicals as the Gazette des Beaux-Arts or the Jahrbücher of the Berlin and Vienna Museums - have become unobtainable. We have confined ourselves to acquiring a number of absolutely indispensable reference works.

As a result, the art historians active at the Institute, particularly the temporary members who cannot bring many books of their own, depend on Marquand Library in a manner quite different from that in which historians or classicists depend on Princeton's general library, known as the "Firestone Library." These other scholars use Firestone as a supplement,

however necessary, to our own library. They consult the books either in the general reading room or in the special lounges assigned to us; and if they need them - more often than not - for a period of several days, weeks, or even months, they simply take them home.

With art historians the situation is quite different. For special and very good reasons, which speak for themselves, art books are not allowed to leave the premises; and this applies, a fortiori, to photographs and, more important still, to the material preserved in Princeton's world-famous Index of Christian Art. Our art historians thus spend most of their working hours in Marquand Library where they are assigned special work desks, in one case even a special office; they use Marquand Library as a permanent habitat, as it were.

This arrangement - which produces a particularly close and fruitful contact between our members, on the one hand, and the staff and graduate students of the Department, on the other - has worked out very well for twenty-five years, and Professor Lee - a loyal friend and, as has been mentioned, a former member of the Institute - does everything in his power to keep it working. But now a critical point has been reached. Both the University Department and our own membership have expanded; there are in the current year six art historians connected with the Institute, and this number is likely to increase, though not excessively, rather than to diminish in the future. The place actually bursts at the seams, and the Department hopes to expand its premises by the factor two. The School of Architecture, now occupying about one-half of the building known as "McCormick Hall," will be moved to other quarters, and the space thus vacated will be at the disposal of the Department of Art and Archaeology. Marquand Library will be housed in a new structure, and the plans provide for special facilities - one office and a study room containing 12 comfortable

desks, each equipped with individual bookshelves - for scholars other than staff members and graduate students, particularly for members of the Institute.

It would be not only generous but justifiable from a purely practical point of view if the Institute could make a special appropriation for this purpose. As the Institute has made, in the past, a substantial contribution to the construction of Firestone Library it may now make another though much smaller contribution (say, one-tenth of what was contributed to Firestone) for the facilities to be specifically destined for our art historians and to be designated as a gift of the Institute. As I said before, the situation is unique in that our art historians not only use Marquand Library but actually live there; and the very fact that the Institute has been relieved, and will continue to be relieved, from the burden of investing money in art books would seem to justify a special contribution - a contribution which would serve to perpetuate and to formalize the symbiotic arrangement now in effect and would amount to only a fraction of what we should have to spend were we obliged to buy art books ourselves.

Gentlemen of the Board: I may be out of order in ending on this note of special pleading. But those who are privileged to speak to you today have been told that they could say whatever weighs upon their hearts. And what weighs most heavily upon the heart of a professor whose days are numbered is, of course, the future of his discipline.

Inscription Suggested for the Visiting Scholars' Room in Marquand Library

QUOD BONUM FAUSTUM FELIX FORTUNATUMQUE SIT.
PRAESIDE ET CURATORIBUS UNIVERSITATIS PRINCETONIENSIS ADNUENTIBUS
INTRA BIBLIOTHECAE MARQUANDIANAE LIMEN
HAEC ERUDITORUM UMBRACULA
TAM SUORUM QUAM AMICORUM USUI DEDICAVERUNT
INSTITUTI A STUDIIS SUBLIMIORIBUS NUNCUPATI ANTISTITES
A.D. MDCCCCLX.....

Translation

MAY THIS BE GOOD, WELL-OMENED, FELICITOUS, AND FORTUNATE!
WITH THE CONSENT OF THE PRESIDENT AND TRUSTEES OF PRINCETON
UNIVERSITY THE TRUSTEES OF THE INSTITUTE FOR ADVANCED STUDY HAVE
DEDICATED, WITHIN THE CONFINES OF MARQUAND LIBRARY, THESE LITTLE
SHELTERS OF SCHOLASTIC ENDEAVOR TO THE USE OF THEIR OWN MEMBERS
AS WELL AS OF FRIENDS.

IN THE YEAR OF THE LORD 196.....

Fac Weil - talk to Trustees
File copy

Talk to the Trustees of the Institute for Advanced Study by Professor
André Weil, April 1, 1960.

As the Director says, I am a relative newcomer. I have as yet only quite hazy notions about the nature and functions of the Institute as a whole. I think it is my duty as a professor of the Institute to acquire some ideas and some views on those matters, but two years is rather a short time. But I have quite clear and definite views about the nature and functions of the School of Mathematics, in the narrow sense, meaning mathematics and excluding physics, for the simple reason that ever since the Institute was started, I had quite close contact, sometimes directly, sometimes indirectly, with mathematics and the mathematicians at the Institute. Many of the people who have been here have been among my closest friends; I was a member here myself in 1936; also, it has been impossible to keep in touch with the mathematics of the last 30 years without at the same time being in close contact with the mathematics at the Institute. This means that I am going to invade the province of my colleagues the historians, because the history of the mathematical school of the Institute, is an essential chapter of the history of modern mathematics, and the two cannot be dissociated. It is unthinkable that anyone would write the history of mathematics in the 20th century without devoting a large portion of it either to the Institute, or to the mathematics which have been done at the Institute, which comes very much to the same thing.

The first point to keep in mind (a very gratifying one to a mathematician) is that even now, in spite of anything you may hear to the contrary, mathematics has remained one subject. If you ever hear

- 2 -

anyone saying that mathematics has split up into a number of fragments which are isolated from one another, this is simply not true. Of course, there are men who have specialized in such a narrow corner of mathematics as to become quite unable to understand what has been going on in some other corner. Nevertheless, mathematics has remained a unified subject. Incidentally, in science it seems to be the one subject which has preserved a continuous tradition. It has a solid, continuous history, of say, twenty-five hundred years. It started much earlier than that, but twenty-five hundred years is the period of continuity during which there has been no interruption. There have been considerable slowdowns, in the Roman period, in the Middle Ages, but no interruptions. It has remained unified in the sense that mathematicians, at least good mathematicians, from whatever branch they come, still understand each other, and think along parallel lines. Of course, the temperament of an algebraist is not that of an analyst, and everyone has his own personal preferences. But it is all one subject, and it constantly happens that classifications break down; whatever barriers appear at one stage between the various branches of mathematics, they have a way of collapsing, and then things get subdivided in a quite different manner ten or twenty years later; some of the most important progresses in mathematics, say over the last hundred years, have come about precisely like that, through penetration from one branch of mathematics into another, so that a constant interchange of ideas between all branches is essential.

Even a hundred years ago, certainly a hundred and fifty years ago, the same applied to mathematics and theoretical physics. It was part of the business of a mathematician to know as much as there was to know in those days about theoretical physics, and the people who

by temperament were theoretical physicists had to know practically all that was then going on in mathematics. Here a barrier has appeared which, at any rate at the moment, seems essential. We mathematicians do not profess to understand anything, we are completely ignorant, so far as theoretical physics are concerned, and the converse is true. We may occasionally make an effort - of course it is very interesting to have theoretical physicists physically close to us, and to hear them talk; apparently it is also of interest to them to hear us talk, since they do try to talk to us sometimes; but it does not seem to be particularly informative so far as our actual work is concerned. But within mathematics (pure mathematics as some people prefer to say), there is absolutely no barrier, and it is essential that a constant interchange of ideas should take place.

This need has always been there, all the time through the history of mathematics. Presumably, in the time of Archimedes, it was there, whatever machinery there may have been to satisfy it in those days; certainly it was there in the nineteenth century. There has to be some spot where the interchange of ideas takes place. Personal correspondence has always played an important role. The correspondence of Newton, that of Leibniz, of Bernoulli, are an essential part of the history of mathematics in their time. But physical communication has always been even more important. It has always been necessary for the progress of mathematics that there should be somewhere a physical location for a clearing house in mathematical ideas. In the nineteenth century, immediately after the Napoleonic wars, the clearing house was Paris. When Abel or Dirichlet wanted to hear what was going on in the branches of mathematics of special interest to them, they came to Paris. This, roughly speaking, went on until around 1880, when Göttingen came into prominence; it became the main clearing house, while a secondary center subsisted in Paris; this lasted until the first world war. After that,

- 4 -

for about ten years, Göttingen was the only place to play that role; somehow Paris had disappeared from the picture.

When Hitler came to power, Göttingen collapsed. By a very lucky accident, this, as you know, was precisely the time when Flexner created this Institute. In doing so, Flexner chose to give particular prominence to mathematics, for a number of reasons which it is not for me to try to guess. There must have been in his mind one obvious consideration which, it seems to me, was a very sensible one, namely, that mathematics is probably, nowadays, the field where, with a given outlay of money, you can get the most far-reaching results. This is quite obvious, because mathematics depends only upon salaries and a rather modest library, nothing like the libraries which historians require in order to do their work; nothing like the experimental apparatus required by physicists, chemists and so on. Mathematics, as I said, takes a comparatively very small outlay of money per head, so to say, to achieve maximum results. And, of course, the timing was very fortunate, because Göttingen, and German science in general, had just collapsed, so that Flexner could draw upon the people who had to leave Germany at that time, such men as von Neumann and Hermann Weyl. I think Hermann Weyl is really the man who made the mathematics at the Institute what it is, because of many qualities that he had, but particularly because, being a true pupil of Hilbert, he shared that belief which I have expressed to you, that mathematics is one science, a unified subject, and must go on as such. And he organized things here, or rather he refrained from organizing things, he created things here in that spirit.

- 5 -

Now, since 1932 (it took a few years to get started, so it would be more accurate to say since around 1935), Princeton has played its role as the main clearing house for mathematics in the world. In recent years (for the last seven or eight years perhaps) Paris has again become a world center in the same sense, not quite the equal of Princeton, but also very important. What I want to emphasize is that it is absolutely essential for the progress of mathematics that there should be such a center, that it is very fortunate for mathematics that such a center has appeared in Princeton, that it is there, and, so far as one can see, there is every reason why it should go on being there. The only shadow in this picture is that of the communications with so-called iron curtain countries. Now we have good communications with Poland, at any rate; Polish mathematicians do come here to our and their mutual benefit. So far we have not had a single Russian mathematician, and all our effort in that direction has not led to anything; this is too bad, because they need contact with such a clearing house just as much as we do. They know it very well, and I am quite sure that they deplore the fact that they cannot use it. They do have their own internal clearing house in Moscow, but that is not enough to give them full contact with world mathematics.

Now, to describe the way in which this center, this clearing house, is actually functioning, is quite easy. But first, it must be quite clear to you that what is essential to our clearing house is not so much the people who are here permanently as the people who come here for periods of, sometimes one term, more frequently two terms, occasionally two years. So, the essential thing in the Institute, as I see it, is the temporary member. The permanent faculty plays an essential role in several ways. Of course,

- 6 -

there is the work they are doing, but that goes without saying, and wherever they would be they would presumably do more or less the same work. If, occasionally, there is a man on the faculty who thinks of the Institute as an ivory tower, where he can shut himself up in his study and do his work undisturbed by the outside world, that is fine. We can well afford to have occasionally a man of that type if he is of the proper caliber. But he does not contribute anything special to the life of the Institute. Such a man just has to be left alone. Apart from such people, who, naturally will occur from time to time, and for whom I have, of course, a great respect, the essential role of the permanent faculty, it seems to me, is to serve as nuclei around which temporary constellations of temporary members will gather; it is to establish a contact between the temporary members. Sometimes, when they come here, they have not even a common language to begin with; usually they know some English, but sometimes not too much. Apart from such unavoidable language difficulties, it can very well happen that the ideas of one man are highly relevant to the work of another, but they do not know it, and they may never discover it unless there is someone, preferably someone on the permanent faculty to tell them. That is one of the best things that a faculty member can do; he knows about those people, because he has taken part in appointing them; so he is in the best position to put them in contact with each other, and tell A, "Now, you should hear what B has to say". Of course, this also happens through informal contacts, through lectures, through seminars; there are lots of ways in which this can happen, but we have to act as catalysts, whenever possible, to favor that.

- 7 -

Of course, we also have a basic role in making the selection of those temporary members, and, in order to do that, it is essential that we know what is going on in mathematics, in all fields of mathematics. Up to a point, coverage of the various branches of mathematics is far less important to us than it is in a university. A university must have a man, for instance, to teach algebra, or to teach partial differential equations, and if they do not have a man of the proper caliber, since the teaching has to be done, they take the next best person. We would not do that. We are all agreed that we would not and should not do that; but whenever possible, it is very desirable, and even important, that we have between ourselves, within the permanent faculty, a reasonably complete coverage, so as to have some idea between ourselves of what is going on in all branches of mathematics, and to be in a position to send for the people who are doing really advanced work in all directions; naturally, this also requires a certain amount of judgment, which we hope we possess; otherwise we are doomed to failure.

Here I have a list of the mathematicians, the temporary members for this year; I have broken it down into categories, and this gives, I think, a fairly good picture of the work we are doing. I have divided it up into Americans up to the age of 32, Americans above the age of 32, and foreigners. Let us begin with the foreigners. That is where our role as a clearing house for mathematical ideas is most prominent, and this is inseparable from our role in world mathematics. Our foreign members, by and large, are the most prominent people, doing the most advanced work, in every direction, all over the world, wherever and whenever we can get hold of them. We have absolutely no rule in our School, no mechanical criteria of selection. For instance, we do not say:

- 8 -

"This man has no permanent job, therefore we cannot have him, because that would be dangerous, we might be stuck with him." We just do not care. We invite whomever we want. As I said, the Russians, unfortunately, have not responded. Everywhere else, we have no problems. Firstly it is generally considered an honor, all over the world, to receive an invitation to the Institute; secondly, and this is more significant, there is hardly any mathematician in the world who is not quite sure that there is a great deal for him to learn in Princeton that he would find it hard to learn anywhere else; so it is very unusual, when we want to have somebody here, that he should not respond. Maybe he says, "I cannot come next year; I prefer to come the year after that". But he comes. This incidentally, was a decisive factor in my decision to leave Chicago and come to the Institute. There were other factors; but there is nothing so pleasant to me, I must say, as to think that whenever there is a man anywhere, be it in France, be it in Japan, be it in Scandinavia, whose work interests me, I do not have to go to him; I just tell my colleagues, "This is an interesting man, who is doing interesting work in such and such a field". And then he is invited. It is automatic. It is automatic as long as I show reasonably good judgment, of course. If the man I recommended was considered by my colleagues as a flop, then they would certainly not let me have my way about him; but this has not happened to me yet.

Now the majority of our foreign members are very distinguished people, each one in his particular branch, and contacts with them are likely to be exceedingly fruitful. Occasionally we also make some invitations under the heading "Aid to underdeveloped countries". We invite a man who is not so prominent, not so active, but who is isolated. We think it is very important that a man who is working as a teacher in a scientifically

- 9 -

underdeveloped country should have a chance to discover what is going on in world mathematics, and then go back home; even if he does not do much active work himself, he can pass this knowledge on to his students, and we hope that there will be a better man turning up later, as a consequence of that. Occasionally we also get a very young man from a foreign country if he shows sufficient promise, even though he may not have much to his credit in the way of actual achievements; but that is rather an exception.

Now I come to the Americans. Last year there were about 24 foreigners, 19 Americans below 32, 16 Americans above 32; roughly, therefore, the three groups are about equal. What is the role of the Institute in American mathematics, as distinguished from world mathematics? This role is no less essential; in fact, if one looks at the Institute purely from the American angle, its usefulness is even more striking. I think you will get an idea of this if I tell you that there are very few mathematicians of any distinction in this country who have not spent some of their young years, one year, more frequently two years, at the Institute. They may not have come always on our funds. Very frequently, more and more so in recent years, they come with NSF fellowships, or other support. But we are making no distinction; this purely financial distinction is of importance to the people who make the budget; it is of no importance at all to the mathematicians. So those young men are essentially the young men in American mathematics who give some promise of becoming somebody. Of course, there we have much less data to go by, and therefore, we have much more frequently to take a chance; that means that the rate of efficiency of the system is less; the proportion of flops is much greater. This is part of the system; we do not have to regret it. If we were to exclude all the young men of whom we are not quite certain that they would become

- 10 -

distinguished mathematicians, then perhaps we would not have any at all, or extremely few. We can do much better by taking a proportionately rather large group of young American mathematicians, giving them the chance of coming here into contact with all that is best in world mathematics (incidentally also with ourselves, with the faculty, but that may not be so important). Then, given that chance, it is up to them to take it up and show what they can do; and I think on the whole that we have every reason to be pleased with the results; it is not only that, in all American universities, most of the serious mathematicians are people who have spent some time at the Institute; but I am sure there are few of them who would not honestly say that the time they spent at the Institute has been a decisive influence; and to verify this, one has only to see how often, when they have a student of some real promise, their advice to this young man is "Go to the Institute". In recent years, a young American mathematician who wants to learn more than he could learn from his own professors, who wants to broaden his ideas, has had the choice between going to Princeton or going abroad, frequently to France, occasionally to Germany, depending on his field. Also, with federal support, contract money, and so on, it has become much easier for such a young man to go to places like Harvard or Berkeley; but even now there is no place where a young man has quite the same opportunity of coming into contact with the best in world mathematics, as he gets in Princeton.

About the third group, there is much less to say. It consists of the more mature American mathematicians; they mostly come to Princeton because they have already been there in their younger years; they know what

- 11 -

to expect. They happen to have sabbatical leave or some other opportunity for doing work undisturbed for a year; such people divide themselves, roughly speaking, between Europe and Princeton. It goes without saying that they are among the most distinguished people in American mathematics; many of them make the same important contributions that the foreigners make. I put them into a different category, because practically all the foreigners have to come here on our initiative, and our funds; so, of course, from our point of view the machinery is rather different. The foreigners have to be invited; we have to offer stipends to them, whereas in the case of the Americans, what mostly happens is that we get a letter, "Next year I have a sabbatical, or a Guggenheim fellowship, or a contract; I do not require any support; I should like to spend a year as a member at the Institute". And the request is granted as a matter of course if the man has any distinction at all as a mathematician.

This seems to complete what I had to say. Maybe one small thing more, which touches on our method in selecting the people we bring here. Particularly in recent years, we try to make ourselves more useful by bringing about temporary constellations, as I said, in this or that subject. This is more delicate than just inviting the best men we can find in every direction. We make some additional effort to combine things so that, if during the next two or three years we expect to invite some men who are working in one particular direction, those invitations are synchronized; we try to avoid that a man should come here, as has happened repeatedly before and say, "Well, it is too bad this other person is coming here next year, and I did not know it. I should have preferred to wait another year and be in contact with him". Then, having those temporary constellations in various directions, things arrange themselves automatically. No organizing

- 12 -

effort is necessary or desirable. Automatically people with a common interest will arrange seminars, lectures, or get together informally, according to what may appear most profitable to them. I could mention some of the seminars that have been going on this year on this or that branch; they were of the highest possible interest to those who took part in them; but to hear details about them would be of no interest to you at all, I am sure, so I think I will stop now.

POSTSCRIPT

During the discussion which followed the talk, the question was raised whether (assuming adequate financial resources) the School of Mathematics might increase its usefulness by having more temporary members.

My answer was in the negative. This, of course, reflects only my personal views, but I believe it would be shared by most of my colleagues. Given the present state of American and world mathematics, we are inviting as many temporary members as we care to. Some of us, occasionally, may find themselves favoring a slight increase, while some may feel that a slightly more restrictive policy than is followed now could work to our advantage; but the percentages involved in such disagreements are small. To me, at any rate, any substantial departure from our present numbers is unthinkable as long as the general picture, in American and world mathematics, remains more or less what it is now.

Finally, I wish to repair here one important omission (in my talk and the ensuing discussion). Speaking of the Institute, I made no mention of the University and of our relations with it. Of course the mathematical center in Princeton would not at all be what it is, and we could not function as we do, if there were not here, side by side with us, a

- 13 -

University with a strong department of mathematics. In this respect, too, Flexner showed his wisdom, by creating the Institute, not in a vacuum, but as a next-door neighbor to Princeton University. Of our relations with our colleagues and with the students there, there is nothing to say except that "happy people have no history". We share seminars, lectures, library facilities, scientific information with them; our relations with them, personal and scientific, are close, free and informal; our best hope is that things will go on like that in the future and there is every reason to expect that they will.

Tn - Fac into write
Apr 1960

ONE TWENTY FIVE PARK AVENUE
NEW YORK

OFFICE OF
SAMUEL D. LEIDESDORF

May 2, 1960

Dear Professor Weil:

I appreciate your letter of
April 21st and shall be happy to meet
with you after you return to the Institute
in the Fall.

With kindest personal regards
and looking forward to the pleasure of
seeing you again, I am

Sincerely,

Professor Andre Weil
3 rue Auguste-Comte
Paris (6e)
France

Air Mail

c.c. Dr. Oppenheimer

THE INSTITUTE FOR ADVANCED STUDY
PRINCETON, NEW JERSEY

3 rue Auguste-Comte, Paris (6e)
April 21, 1960.

SCHOOL OF MATHEMATICS

Mr. Samuel D. Leidesdorf
125 Park Avenue
New York City

Dear Mr. Leidesdorf:

Your very kind letter of April 6 has only just reached me in Paris, where I am spending the spring.

It was a pleasure to talk to you and to your colleague about the work at the Institute, and it is most gratifying to learn that my modest remarks have met with such warm response.

I had indeed some idea of writing up those remarks eventually (for private circulation only); this was in fact what I had in mind when I asked that a tape-recording should be made. Now, with your encouragement, I shall certainly do so, but not before the Fall, when I shall come back to the Institute.

Your own comments on my talk were of great interest to me. I am greatly interested in the early history of the Institute, and, as you are one of the very few persons now who are thoroughly acquainted with it, I should be very happy if I could learn more about it from you. Perhaps some suitable occasion might be found for this in the Fall? I should be very grateful.

With best thanks again, I am

Sincerely yours

A. Weil

A. Weil

THE INSTITUTE FOR ADVANCED STUDY
PRINCETON, NEW JERSEY

SCHOOL OF HISTORICAL STUDIES

April 7, 1960

Mr. Samuel D. Leidesdorf
125 Park Avenue
New York, New York

Dear Mr. Leidesdorf:

Very many thanks for your letter of April 6th. Needless to say, I am delighted to hear that our efforts left a favorable impression with the members of the Board of Trustees, and a typescript of my little speech will be placed in the hands of the Director within a few days.

Permit me to add a word of special gratitude for the kindness with which the Board - and particularly yourself - received and acted upon my remarks about the special needs of art historians connected with the Institute. The speedy and generous action of the Board represents the consummation of what I and my associates have been trying to do during the last twenty-five years.

With my best personal wishes, believe me,

Gratefully yours,

Erwin Panofsky
Erwin Panofsky

EP:rs

THE INSTITUTE FOR ADVANCED STUDY

PRINCETON, NEW JERSEY

SCHOOL OF MATHEMATICS

April 21, 1960

Dear Mr. Leidesdorf:

Thank you so much for your kind letter. I am glad that I have been able to convey something of the spirit that moves us. However, I made no detailed notes for this talk and whatever brief jottings I had were thrown away. Had I known beforehand that you might like to have some record I might have prepared myself accordingly. As it is, I am afraid I have to state that the preparation of a record would be like preparing stale food. And this I would not like to do.

With kindest personal regards, also to Mrs. Leidesdorf, I am

Sincerely yours,

A. Pais

Copy for Dr. Oppenheimer

Tn mltg Apr 1960

ONE TWENTY FIVE PARK AVENUE
NEW YORK

OFFICE OF
SAMUEL D. LEIDESDORF

April 6, 1960

Dear Professor Cherniss:

On behalf of the members of the Board of Trustees of the Institute for Advanced Study, with whom you met over the week-end, and on my own behalf, I wish to thank you for your talk to us. What you said gave a vivid and inspiring glimpse of the world in which you work, of the part that the Institute has played and should play in this work, and of the high qualities which you and your colleagues have brought to it.

I hope that it may be possible to have some record, however informal, of what you said to us. We shall not forget it and I thank you most cordially.

With kindest personal regards, I am

Sincerely,

Professor Harold Cherniss
The Institute for Advanced Study
Princeton, New Jersey

Also sent to:

Professor Andre Weil
Professor Erwin Panofsky
Professor Abraham Pais
Professor George Kennan

✓ c.c. Dr. Oppenheimer

In. mty Apr 1, 2, 1960
(folder on arrangements, etc?)

4 April 1960

Dear Mr. Leidesdorf:

Herewith a draft of a letter that you might send to the five professors who spoke to the Board this weekend. I thought that you would want it on your own letterhead; and hardly need to emphasize that you can and should change anything which does not please you, or reject it entirely if you would like to write in a different way.

Let me thank you again for presiding so skillfully over what seemed to me a very good meeting of our Board.

Very sincerely,

Robert Oppenheimer

Mr. S. D. Leidesdorf
125 Park Avenue
New York 17, New York

D R A F T

Dear Professor _____

On behalf of the members of the Board of Trustees, with whom you met over the weekend, and on my own behalf, I wish to thank you for your talk to us. What you said gave a vivid and inspiring glimpse of the world in which you work, of the part that the Institute has played and should play in this work, and of the high qualities which you and your colleagues have brought to it.

I hope that it may be possible to have, however informally, some record of what you said to us. We shall not forget it; and I thank you most cordially.

Professor Harold Cherniss
Professor André Weil
Professor Erwin Panofsky
Professor Abraham Pais
Professor George Kennan

Section of questions and answers not retyped.
Pls. decide how much of it we should type and
send to Prof. Weil.

- 17 -

, as has happened repeatedly before, and say, "Well, it is too bad this other person is coming here next year, and I didn't know it, and I should have preferred to wait another year and be in contact with him." So we try to avoid this, which is not always possible, but this also helps. And then, having those, as I said, temporary constellations in various directions, then the thing organizes itself automatically. No organizing effort is necessary or desirable certainly at all. The thing organizes itself automatically into seminars in ~~this~~ this and that subject. I could mention some of the seminars that have been going on this year on this or that branch, and those seminars were of the highest possible interest to ^{those who} took part in them, and to hear details about them would be of no interest at all to you, I am quite sure, so I think I will stop here.

Dr. RO: thank you very much. I doubt if your audience has ever heard a better account of what this is all about.

Mr. Leidesdorf: The thing that was particularly interesting to me is your ideas about why Dr. Flexner started the Institute with mathematics. I know a good deal about it, because I worked with him, and we had a limited income of less than \$150,000 a year, and no buildings or anything to work with; and what he said was we would get brains, and that is what we needed, and not buildings,

- 18 -

and the way to start it was with mathematics. Then I think we got a hold of Oswald Veblen, that was the first one, and then from then on, we started this mathematical group. And it is really amazing how clearly you have described what was on his mind, because I worked with him, and know this.

RO: I am very sorry that Veblen's health is so poorly that he could not hear ...subject to which he has devoted a good part of his life.

Henry (H): May I ask one detailed question? You had about 19 young mathematicians. Supposing you had had double that number, would you expect that the results would be much less than twice as good? In other words, does that represent your idea of the cream of young American mathematics? Is the size ideal...

AW: I don't see how we could have more than that without diluting our group with inferior people, who would not only not contribute anything, but would make the situation worse. I don't envisage any expansion of that, as long as the general picture in American universities is what it is now. Of course, if the teaching of mathematics improves 100%, not only in American universities, but it would require a more than 100% improvement in American secondary education. Now, it is quite conceivable, in view of the size of the country-- after all, ~~(we have)~~ this country ^{has} is about, roughly, four times as many people

- 19 -

as there are in France. Now, if the teaching of mathematics were to produce a proportionate amount of distinguished young mathematicians of promise here as it does in France, then it would become very desirable and necessary for us to increase the size of our group. But as American mathematics are at present, in the universities and in secondary education, it is unthinkable to me that we would want to increase the size of that group.

(Linder?): : Doctor, are there any reliable figures as to the numbers of mathematicians studying today, as compared, say, with ten years ago, or as compared with those figures that we are handed as the numbers that are being taught by Russia?

AW: I have not the vaguest idea. I can't even say that I am interested, because since one's interests in life have to be limited, my interests, so far as mathematics are concerned, are restricted, I confess, to what one would call creative mathematics. I am not really interested in teaching, although (or)...So far as creative mathematics are concerned, I think the picture ^{of} ~~that~~ the Institute gives you a perfectly fair idea of the picture in the country. You see, we have those, well, roughly, 20 young men every year at the Institute. (Well,) suppose you add to this maybe 10 ~~or~~ to 15 in the group who are going abroad. Of course, I answered your question with the idea in my mind that it is not particularly desirable that they young men in the group who do choose to go abroad, should

- 29 -

all have to come to the Institute. Suppose there is a war, and nobody can go abroad, then--well, then all those young men would go into the army, so the question again would not arise. But it is very desirable that a certain proportion of the group should go abroad, and acquire experience there. In fact, most of them will go to Princeton at one time, and abroad at some other time. But if you assume that, by and large, in that age group, there are 30 to 35 young men of promise, then that is about all.

Judge Wyzanski~~??~~ : May I make a remark; not a question. I am very happy indeed that this was recorded, and I do hope that you will write a paper based upon what you have said; and beyond this particular group, I hope that the paper would reach presidents of foundations, because it does seem to me that the program, as it has been explained here, presents the kind of progress which would be financed by foundations, and that we might relieve ourselves of part of our normal budget, use part of the funds which have been spent for these purposes, for building a library, for which we will not, in my opinion, get foundation funds; and that this kind of progress ^{-- in} ~~(is)~~ particularly ~~the~~ foreign aspects of ^{it --} ~~this~~, certainly would be likely to be born by a foundation or by foundations.

RO: ~~Explain~~ ^{Just} In pathological cases we have ~~(had)~~ help from foundations. The

- 21 -

Ford and Rockefeller Foundations are both interested in exchange with Poland and Yugoslavia, but they are not equally interested in exchange with France or Copenhagen.

Mr. Leidesdorf: I ^{have been} ~~would be~~ very much surprised, sitting here and listening to the professor as I have done, how near his ideas coincide with Dr. Flexner's. To put it in a very ~~succinct~~ few words, Flexner said, "what we want is quality and not quantity." That is the way he used to express it; and that is really what has been carried out here. And your ideas are very much in line with what his were in those days.

Gen. Greenbaum?: I would appreciate it if you would give your ideas on another thing. Professor Cherniss said what he felt the School of Historical Studies gained from having a school of mathematics in the same institute. What is your feeling, what, if anything, does the School of Mathematics gain by having a School of Historical Studies here?

AW: Well, firstly, I am too new at the Institute to have clear ideas about that. Personally, I have some personal interest, well, firstly, I have taken a moderately active interest on occasion in the history of mathematics, including the history of Greek mathematics, and also I have some interest in languages and historical studies in general, and I find it extremely pleasant here to be able to have close, to have occasional contacts with my

colleagues there. This also is an advantage that I find in this institution as compared with a big place like Chicago, where, because of the size of the place, it is so entirely compartmentalized that one has to make almost superhuman efforts to get contacts with colleagues in quite different fields, and then one does not make that, so it is a very pleasant aspect of life here, and I like to imagine that the younger generation of American mathematicians it has some vaguely favorable influence to be in personal contact and communication with scholars in the sense of the, well, say, the continuation of western culture, because everything is a part of western culture. But beyond this very vague sense of a pleasant feeling about it, which I certainly share with Professor Chemiss, I don't see that there is more to say.

Linder: Professor Weil, I wonder whether you would care to comment on what I think is a popular notion that most of the original work in mathematics is done by very young men--^{by that} I mean men up to the age of 30. Is this a popular delusion? or is there some substance to this notion?

AW: It is not entirely a delusion, and there is some perfectly good substance for this. I will try to say something very briefly--I could easily start ^{about it} talking for an hour or more. Briefly speaking, it seems clear that ^a mathematicians' (the) younger years, say up to the age of 30, is when ideas come up in his mind,

- 23 -

where his mathematical imagination is at its most creative, and ideas come up in great number. In fact, in the best cases, they come up in such number that it is entirely impossible ~~to~~ for him to work out even a small fraction of them during that period. This means that his creative imagination makes it possible for him, in the most favorable cases, of course, ~~enough~~ to go on for, frequently, a lifetime. There have been cases--Elie Cartan, who did active creative work until the age of 80. That is very exceptional. But this does not mean, of course, that he had so many ideas coming to him when he was 60 or 70 as in his earlier years; it was certainly not the case. But this, in a certain sense, can be compensated for by greater experience, a broader outlook, and many other factors and qualities. [Now, when a mathematician says--well,] [there must be physiological factors implied. There are people who become unfit for intellectual work after the age of 35 although they were very brilliant in earlier days. It is something that I think happens, and it must be due to some physiological factor. But normally speaking, I think that, [while] there is an essential difference, [I think,] between mathematicians and historical studies, where the amount of learning that a man has accumulated is absolutely vital even for his creative work. It is not so in mathematics. But I think, and there are many examples to prove it, it is clear that a

- 24 -

mathematician can keep up very respectable work at any rate, given the will to do it--that is essential; if he loses the will to do it, he will tell you, "Well, I have so much administrative work to do" This is just an alibi, of course, for the man whose will has become weak. But given the will to go on, and constant study, because mathematics is a full time occupation, very definitely, then I think all examples go to show that the average mathematician can reach the age of, roughly speaking, 60, and still be doing useful work. What happens after the age of 60 is another matter. After that, many will decline fast, and some will go on ^{for} much longer. That is a matter of ... Now, a consequence of this is, however, that a mathematician may be said to reach his peak around the age of 35 in the average. And after that, the best he can hope to do is to remain on the level until, let us say, the age of 55 or 60, when he will begin to ~~decline~~ decline. As a practical consequence, for instance, considering the age of the mathematical faculty here, if, well, there is no vacancy at this instant, but suppose, for instance, the trustees tell us that tomorrow we are welcome to make an appointment--I am not asking for it, mind you, but assuming that tomorrow there would occur such an opportunity--then I, for one, should very much wish to appoint a man definitely below the age of 35; if at all possible, below the age of 30; a man who is

- 25 -

still in the ascending phase, if not a man who is in the ^{middle?} ~~(latter)~~ phase,
certainly not a man who is approaching the ~~last~~ declining phase.

Leidesdorff? : Professor, isn't it a fact that in an environment of this
kind, these young men help to develop ideas that, if it wasn't for the
association with other ~~men~~, other mathematicians, that would never have been
developed? ^{probably - - - by talking to} ~~....The~~ other men in consultation, and a lot of his ideas would
have never matured if he hadn't been able to associate with men of your type~~s~~ here?

AW: That is exactly what I meant by a clearing house.

Dr. Weil, you spoke of a secondary center having arisen in
Paris. Is there something there comparable to the Institute, or ~~are~~ they
just in their universities?

AW: It is mostly the University. Now, since last year, they have created
something which, well, on paper is comparable to the Institute, but in size
it is much smaller, it is only in its initial phase. It may develop into
more, but it isn't comparable at all in the present moment. But I was
thinking of ^{the} University plus everything else, the Collège de France, that
Institute, [and,] incidentally, I should, of course, have said, I think it
must have been understood, that when I was speaking of Princeton, ~~xxxx~~
of course I have always been saying the Institute, because this is the place

- 26 -

of concern to us, but for the mathematician, when one says Princeton, it

does not mean just the Institute, it means the Institute plus the University.

(Without the University,) the Institute would not be the center that it is if there was not a University at the same time. It is the two together which is the mathematical center in Princeton. It is not just one institution or the other, it is the two together; and the presence of both has been absolutely essential to the usefulness of both institutions for the last 30 years. Of course, Hermann Weyl was very conscious of that, and there is no man who has made greater efforts to develop cooperation between the University and the Institute than Hermann Weyl.

Leidesdorf: Robert, wouldn't you like to say a few words about this French situation. You were over there.

RO: I did report on it at the autumn meeting, and there are not very marked changes. The Director is visiting us here in April; and I think I should say that André feels enough hope in it, or at least enough absence of distrust, to spend the spring semester at the Institute, and I enough to concern myself a little with its development, especially in physics. It is not growing rapidly. I think that one of the most interesting features is the cordial, unencumbered and enlightened attitude of the French industries that are

- 27 -

contributing to its support, something which I ^{think} (suppose) 20 years ago no one would have supposed possible; and the unfailingly high quality of the people who are associated with it. There aren't very many, the association is tenuous, and if it disappeared one could certainly not say that mathematics had suffered deeply--probably not ^{even} say that much about physics. But I hope that in a decade it will play a very substantial part.

AW: I am quite convinced, from the very detailed knowledge of the mathematical situation in Paris, that in that field it can make a small but exceedingly useful contribution to the mathematics there, and, while some of my colleagues at the University of the Sorbonne were initially inclined to look upon it with some distrust, I have done my best to persuade them to the contrary, to persuade them that it was very much in their interest to encourage the part of this institution. And I think they have been convinced, by me and by others. I think they are convinced now.

RO: There is going to be a group of physicists there this spring, every one of whom I would be very happy to have here, and every one of whom we have had here. I mean, they are all the best.

(confused)...what proportion of our group would you call physicists, as compared to pure mathematicians; or isn't this a division that you make when

- 28 -

you use the term mathematics?

AW: Oh, yes, very much so. I have always excluded the physicists in everything

I said. My figures were for the mathematicians alone.

RO: I thought it impossible, I thought it unprofitable to report on the two

groups together, because the situation is radically different, and, although

I think ⁱⁿ ~~it~~ both cases all right....

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