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“An individualist of the old-fashioned American type”: The informal scientific diplomacy of Oswald Veblen

This is a pre print version of the following article:

Original Citation:

Availability:

This version is available http://hdl.handle.net/2318/1887758 since 2023-01-27T09:58:00Z

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(Article begins on next page)

12 October 2024

Mathematisches Forschungsinstitut Oberwolfach

Report No. 56/2022

DOI: 10.4171/OWR/2022/56

History of mathematics through collaboration: Toward a composite portrait of Oswald Veblen

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4 December – 10 December 2022

Abstract. Oswald Veblen played a pivotal role in the history of American mathematics in the twentieth century. His life, however, remains largely unstudied. This conference was designed to redress this issue by exploring Oswald Veblen and his contributions to the history of American and international mathematics in an interactive workshop that used the Veblen Papers from the US Library of Congress as a foundational and shared resource. With this frame, the conference raised queries and discussed issues related to Veblen, his mathematical contributions, and his collaborative initiatives, including his critical work aiding refugee mathematicians in WWII that helped establish long standing programs at American institutions that continue to advance mathematics at the highest level. The workshop echoed Veblen's collaborative focus and brought together historians of mathematics and mathematicians to work alongside one another during the conference. This content and collaborative approach combined to advance our understanding of Veblen's collaborations and the history of twentieth-century mathematics more broadly.

Mathematics Subject Classification (2020): 01A60; 01A70; 51-03.

Introduction by the Organizers

Oswald Veblen earned his PhD in mathematics in 1903 from the University of Chicago under the direction of E. H. Moore. He was, then, among the first internationally-recognized American mathematicians educated in his home country. Woodrow Wilson invited Veblen to Princeton as a Preceptor in 1905 and Veblen remained at the institution and advanced through the ranks, ultimately becoming the first H. B. Fine Professor. While at Princeton, he served the broader

American mathematical community in his role as AMS President (1923-1924) and in his work to secure funds for mathematics (most notably in the form of National Research Council Fellowships). In 1932, he left Princeton University, but not the town, to join the newly formed Institute for Advanced Study as its first faculty member. Saunders Mac Lane has described Veblen's contributions to the Institute as "legendary."[1] Veblen helped hire the first faculty members at the Institute, including Albert Einstein, Hermann Weyl, and James Alexander. He served as a fierce advocate for immigrant scholars. He recognized the value of young scholars and helped establish structures at the IAS that allowed these mathematicians a regular and ongoing place there. He remained on the IAS faculty until 1950 when he segued to Professor Emeritus. As with many mathematicians, this title was a shift in name only, as he continued to pursue his interest in the development of mathematics. He died in 1960, having lived a life fully devoted to mathematics, advancing colleagues through various initiatives and mathematical ideas in geometry and topology.

In terms of style, this workshop followed the successful conference strategy employed by "Women in Numbers" to create project-based interactive workshops with measurable outcomes. Drawing on the archives from the Veblen papers at the US Library of Congress, this workshop began with six talks on topics related to Veblen and his contributions to American and international mathematics in the early- to mid-twentieth century. These talks comprise the first six abstracts below. For the remainder of the time participants worked in small groups on themes in the life and professional contributions of Veblen using his papers from the Library of Congress as a shared resource. The five groups were initially focused on Veblen's foundations of geometry, Veblen and Princeton University, Veblen and the American Mathematical Society, Veblen and World War II, and Veblen and the Institute for Advanced Study. As the workshop continued these topics were refined and revised, as can be seen in the abstracts that follow. At the end of each working day, groups reported on their progress, stumbling blocks, and unexpected discoveries. The abstracts from each group point to research conducted during the workshop, as well as how the collaborative projects will continue and what additional archival resources will be incorporated. This large-scale collaboration on the same corpus served as a novel approach to historical scholarship. The final talk reflected on the process of the workshop, notable achievements, and possible next steps.

The amenities and resources of MFO were particularly conducive for this collaborative conference strategy. In particular, conference participants appreciated the ability to access the MFO library's physical and online resources, the space to meet as a whole as well as in subgroups at any time, beautiful blackboards and chalk, and, of course, bountiful coffee. The organizers would like to extend a generous thank you to Petra Lein for her helpful ideas and assistance in making arrangements for excursions for the group to enjoy Black Forest torte in the

[1]Saunders Mac Lane, "Oswald Veblen: 1880-1960," Biographical Memoirs, National Academy of Science, 1964, pp. 323-341, on p. 333.

town of Oberwolfach and the Christmas Market and Living Advent Calendar in Gengenbach.

Workshop: History of mathematics through collaboration: Toward a composite portrait of Oswald Veblen

Table of Contents

Della Dumbaugh, Stephen Kennedy
A brief introduction to Oswald Veblen 7

Emmylou Haffner
Working with manuscripts 9

Erika Luciano
"The patriarch of the Judeo-Italian intellectuals longing for the embrace with Uncle Sam": Veblen and the Italian refugees 12

Christopher Hollings
The Oslo International Congress of Mathematicians 1936 14

Deborah Kent
Mathematics in the United States before Oswald Veblen 17

Laura E. Turner
On the value of mathematics in society: Observations via education in America during the 1920s 17

Benjamin Braun, Christopher Hollings
Report of workshop summary talk 19

Caroline Erhard, Laura Turner, Helena Durnová
Oswald Veblen's years at Princeton and his role in making Princeton the mathematical centre of the world 22

Benjamin Braun, Samson Duran, Sloan Despeaux
Report of working group on Veblen and the American Mathematical Society 26

David Aubin, Christopher Hollings, Stephen Kennedy, Deborah Kent, Erika Luciano
"An individualist of the old-fashioned American type": The informal scientific diplomacy of Oswald Veblen 28

Emmylou Haffner, Jemma Lorenat, Nicolas Michel, Deniz Sarikaya
Veblen's lecture notebooks on foundations of geometry 31

Juan Carvajalino, Della Dumbaugh
Veblen at the Institute for Advanced Study: Building for excellence 37

"An individualist of the old-fashioned American type": The informal scientific diplomacy of Oswald Veblen

David Aubin, Christopher Hollings, Stephen Kennedy, Deborah Kent, Erika Luciano

It is easy to think of Oswald Veblen as the consummate institutionalist. He, along with Luther Eisenhart and Henry Fine, built a world-class department at Princeton. As President of the AMS he led an incorporation movement and ambitious corporate fund-raising effort. He was Abraham Flexner's main collaborator in designing the programs and recruiting the faculty for the Institute for Advanced Study. He was elected, unanimously, President of the 1950 International Congress of Mathematicians. And yet, in a statement written on May 25, 1953, Veblen writes of himself [1]:

> The fact is that I am the opposite of a communist, namely, an individualist of the old-fashioned American type that grew up in the 19th century. My life has been devoted to my science (mathematics), to my students and to my institutions of learning. This career has been interrupted by the following episodes:
>
> (1) Voluntary service, after I was 37 years old, in the American Army in the First World War.
> (2) Much activity, against the opposition of American anti-Semites, in finding academic positions for refugees from Nazi Germany and Fascist Italy.
> (3) Service as a civilian, after the age of 61, with the Armed Forces of the United States in the Second World War.
> (4) Efforts to find academic posts for refugees from China and from behind the Iron Curtain in Europe.

Expressions of political positions from Veblen are rare, we are left trying to understand his core beliefs by observing his actions. This statement is the most explicit statement of his political philosophy of which we are aware. It is worthwhile to examine the, not yet completely understood, circumstances that elicited this statement. The document from which this quotation is extracted contains references to various circumstances when Veblen was drawn into political activities. He mentions his declining the Honorary National Co-Chairmanship of the American Committee for Protection of Foreign Born in 1948, acknowledging his support of an initiative sponsored by the Committee to petition President Truman with respect to the rights of citizens born abroad. He also refers to limited exchanges he had in the early 1940s with the American Council of Soviet Relations and the American Association of Scientific Workers. This provides evidence of Veblen's support being actively sought after for various political causes and of his relatively sympathetic ear to such requests, but also of his careful reluctance at being formally involved in these political organizations.

The documents we had access to are insufficient to assess fully the circumstances that led to the expression of this statement. In the files we were able to consult,

the only direct evidence of Veblen's political loyalty being personally questioned comes from a letter addressed to him by Alfred Kohlberg, a textile importer close to Senator Joseph McCarthy. We may note that Kohlberg was the funder of the anti-Communist newsletter Counterattack, copies of which are to be found in the archives. In this letter, dated October 23, 1952, Kohlberg pointed out that Veblen was among the signatories of a letter addressed to members of Congress requesting the repeal of the McCarran Act. Although professing not to know Veblen's connection with the Communist movement, Kohlberg underscored that a majority of the signatories were Communists or fellow travelers, ending his letter by asking "whether you consider that your motivations at this time, when American are dying in a shooting war with Communism, is none of the public's business."

Among other documents we were able to consult, we find evidence of Veblen's involvement in the defense of Dirk Struik (accused of having plotted to blow up the White House) in 1951 [2]. After a letter exchange with Hadamard related to the Rosenbergs' trial in 1952, Veblen wrote to President Truman (on January 12, 1953) asking to commute the death sentence to life imprisonment. Stating that he has "no sympathy of the ballyhoo of the Communists," Veblen stated that he thought that "the death sentence is extreme and inadvisable" [1].

Several boxes of documents, as well as Veblen's personal diaries, kept in the Library of Congress might help shed further light on the circumstances that led him to make this statement.

The opening Veblen quote above cites his two instances of war service as breaks in his mathematical career. Existing literature on Veblen nonetheless focuses on his institution-building and war work. When the United States mobilized to participate in the first World War, Veblen took charge of the office of experimental ballistics at Aberdeen Proving Ground in January 1918. The work of modelling the flight of a projectile and computing range tables was quite a departure from the algebraic topology that previously had been the focus of his research and impacted his approach to organizing research work, especially with regards to assembling teams working on related problems. A four-month tour of British, French and English ballistics laboratories increased Veblen's international connections. The experience in WWI brought Veblen and Moulton and Dickson together post-war to discuss questions of preparedness in peacetimes and moved Veblen towards a position of national leadership. The experience also involved him in national-level curriculum discussion of the relative importance of pure versus applied mathematics in education. Veblen, in World War II, served on the Applied Mathematics Panel for OSRD. More research will need to be done to discover his role on that body.

Far better understood is Veblen's WWII work in aiding displaced European mathematicians. See, e.g. [4] and [3]. For displaced mathematicians fleeing from Central and Eastern Europe, Veblen was a reference figure, both as a member of the Emergency Committee in Aid of Displaced Foreign Scholars since its foundation and as an individual colleague sensitive to their plight. In placing the refugees

Veblen had a large role. However, it was the Depression. Young American mathematicians were finding it hard to get appointments, and the question of whether to bring in foreign mathematicians to occupy positions which would then not be available to American mathematicians was debated. Veblen, while continuing to do everything he could, wrote to an Italian colleague, "we have absorbed so many of the scholars who were displaced from Germany that we are dangerously near the saturation point." Throughout the crisis Veblen remained a gentleman and a gentle man who actuated two considerations: a concern for the welfare of mathematics and a humane concern for mathematicians. More research is needed to understand Veblen's prioritization schemes to rank mathematicians who needed placement and to understand the opposition to his efforts mounted by American anti-Semites.

After the Second World War Veblen continued to provide the sort of individualized aid to mathematicians seeking political refuge that, in the 1930s and 1940s, he provided to refugees from Nazism and Fascism. There appears to be evidence that Veblen played for Romanians seeking to flee Communism a central role similar to that he played for Italians a decade before. He claims to have aided mathematicians fleeing Communist China in the excerpt above. As noted above, he involved himself in a variety of left-leaning activities during the postwar decade, enough so that he drew the unwelcome attention of the hunters of Communists. He was, from 1933 onwards through and beyond the war, the nexus of a web of personal connections providing aid to distressed mathematicians. Curiously, he primarily provided this aid from no official position, instead he simply exploited his knowledge of the community and his extensive personal relationships. This institution-man was, paradoxically, a hyper-individualistic giver of succor.

The informal networks that Veblen mobilized for the support of refugees fleeing Europe appear to have emerged quite naturally from the normal scientific contacts of an internationally-minded mathematician. We can get a flavor of Veblen's wider intellectual context by taking the examples of his surviving correspondence with G. H. Hardy, Bertrand Russell, and Hermann Weyl.

From as early as 1905, Veblen was engaging in friendly academic correspondence with Russell. While no detailed mathematics appears within the surviving letters, they are nevertheless about mathematics: Veblen relates, for example, the extent to which Peano's ideas are penetrating into the United States. Indeed, the foundations of mathematics, an interest of both men at this time, are the main feature of the early letters. Reference is also made to publications exchanged, and to the possibilities of visits in both directions.

Veblen's correspondence with Hardy takes a similar form, although here we begin to see features that are evident in his correspondence more generally: the gradual appearance, over the course of the 1930s, of references to aid for refugee mathematicians fleeing Europe, and a more general commentary on the European situation. For example, in a pair of letters that, based on their dates, must have crossed in November 1938, Hardy and Veblen both express the same view, and

propose the same course of action (i.e., resignation), regarding Levi-Civita's recent dismissal as an editor of Zentralblatt.

The shift from mathematical discussions and exchange of publications is even more evident in the much more comprehensive surviving correspondence between Veblen and Weyl. At the end of the 1920s, Veblen assisted Weyl in his arrangements for a visit to the United States, and their correspondence of the time touches briefly upon geometry in relation to problems in mathematical physics – most notably, general relativity. But then, in the early 1930s, the problems encountered by mathematicians seeking to leave Germany are raised by Weyl, at first for others, and then for himself and his family. The correspondence continues throughout the decade, leading up to Weyl's move to Princeton, and becomes still warmer in the process: by 1940, they were addressing each other 'Dear Oswald' and 'Dear Hermann,' in contrast to the relative formality of their earlier correspondence.

In each of these three cases, the correspondence shifts away from scientific exchanges of a more standard type, as Veblen's network was co-opted for his efforts to aid refugees, and indeed also to help non-endangered individuals such as Russell, who sought a position in the United States. But, in line with our wider view of Veblen's scientific diplomacy, the network remained an informal one – Veblen continued to interact with his correspondents on an individual-to-individual basis, without involving any formal structures or organizations.

References

[1] O. Veblen, Oswald Veblen Papers, US Library of Congress, Box 3 Folder Communist charges against Veblen.

[2] O. Veblen, Oswald Veblen Papers, US Library of Congress, Box 25, Folder Loyalty Cases: Struik, Dirk Jan, 1942-1952.

[3] E. Luciano, Looking for a space of intellectual survival. The Jewish mathematical diaspora from fascist Italy (1938-1948), f.c

[4] R. Siegmund-Schultze, Mathematicians Fleeing from Nazi Germany: Individual Fates and Global Impact, Princeton University Press, 2009.

Veblen's lecture notebooks on foundations of geometry

Emmylou Haffner, Jemma Lorenat, Nicolas Michel, Deniz Sarikaya

The starting point of our group is the study of Oswald Veblen's notebook on E. H. Moore's lectures on the foundations of geometry given in the Autumn of 1901 at the University of Chicago[1], where Veblen was a graduate student. This notebook, which as far as we know has never been studied, is 45 pages long, and contains both notes from the lecture and additional notes showing how Veblen reappropriated the texts of the authors studied. The observation that some of Veblen's notes are directly related to results stated in his dissertation prompted us to a close analysis of the contents. We propose a critical transcription of this notebook, along with an in-depth commentary, linked with original sources and with Veblen's, E. H. Moore's, N. J. Lennes', and other participants' later works.

[1] O. Veblen, MSS 44016, Library of Congress.