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Femininity and Science: The Brain Researcher Cécile Vogt (1875-1962)

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> 'It is true, gracious ladies of society, pale and sickly from *poudre de riz* and a thousand and one novels, and supplied with the usual complement of tender sensibility: nervous twitches, perfume, laces and fans, etc., would usually faint at the mere sight of a dissecting table. Given the right circumstances however, this delicacy of feeling will not prevent them from using sophisticated coquetry to martyr a faithful heart or from destroying the happiness of one of their honourable sisters with scurrilous slander.
> Fear not, ladies, such parlour jests will not compromise the reputation of your delicate femininity as long as men decree what it is womanly or unwomanly to do or to know.'[2]
>
> Hedwig Dohm, 1874[3]

The question of the consequences of 'women's admission to the republic of letters' may appear to be a simple one. Attempts to answer it take us over some of the rockiest terrain in feminist scholarship on science, however, as the question implies assumptions about the gender-specificity of women's activities and thereby repeatedly risks reproducing unchallenged mandates about femininity or masculinity—or even creating new ones.

When women of the nineteenth-century women's movement—like the above-cited Hedwig Dohm (1831-1919)— demanded access to higher education and scientific professions, they criticised the models of femininity that were used to deny them such activities. Some contemporary academic men, in contrast, invoked gender difference, fearing that the admission of women would change the university and even scholarship itself.

In feminist history and philosophy of science of the past few decades, enquiries into the effects of women's presence in the sciences over the last hundred years—which, while not exactly overwhelming, has at least been documented after much research— have been accompanied by hopes of uncovering positive processes of transformation in the sciences. Today, the search is for changes on the level of working conditions and research contents, whether in terms of questions asked, methods of investigation or model building in the natural sciences and medicine. Motivations for a critique of the traditional male-dominated production of knowledge lie not least in the visible consequences of technological applications of scientific knowledge, their significance for war, environmental destruction, hazards to health and the creation and stabilising of societal—particularly gendered—power structures. Women's far-reaching exclusion from key positions can be regarded as another

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[1] * in the footnotes indicates additional remarks by the author for the English translation, 2007. I wish to thank the Wellcome Trust Centre for the History of Medicine at UCL for making the translation possible.
[2] Hedwig Dohm, *Die wissenschaftliche Emancipation der Frau* (Berlin, 1874; reprint Zurich, 1982), p. 122.
[3] * Hedwig Dohm (1833-1919) became the most important theoretician of the radical women's movement in Imperial Germany as an author, she was part of the intellectual elite of Berlin. Her texts are written in a highly ironic a mocking style, arguing very much ahead of her times. They are still enjoyable and inspiring for the reader of today. Dohm attacked outspoken antifeminists, especially scientists, physicians, clerics and demanded that human rights should apply for women as well: „human rights are gender free". She was the grandmother of Thomas Mann's wife Katja Pringsheim.

source of criticisms of the character of science and medicine.[4] Although this interpretation may oversimplify the problem and proceed from a questionable assumption of women's otherness, the still relevant demand for women's equal representation on all professional levels in the natural sciences and medicine remains associated with calls for a paradigm shift in the sciences themselves.[5]

Against this background, we can enquire into historical experiences concerning the presence of women in the sciences. More recent studies of the contemporary influence of women on research questions and findings in biology show that there were clear effects, especially in those areas where gender roles were being studied. It was important here that a substantial number of women were active in various fields of research and that the women's movement was posing related questions at the same time. Research findings prejudicial to women declined significantly as a consequence.[6]

If we go farther back in time to the women who were active in science around 1900, the question of the changes brought by women's participation —a question derived from present-day problems—appears at first to be inadmissible and unsuited to the situation at the time. Until now, studies of the earliest women scientists of the twentieth century, where they address these women's experiences at all, have tended to focus on the discrimination that they faced.[7] At the moment we also cannot yet assess the scope of women's involvement in science during the first half of the twentieth century, particularly if we wish to take into account the invisible work of many scientists' wives, the only published evidence of which is the thanks for their invaluable collaboration in the Acknowledgments sections of their husbands' books.[8] Feminist research fluctuates here between underestimation and high expectations of female pioneers who are expected not merely to have succeeded in working as scientists and making a lasting name for themselves but also to have productively brought their female socialisation to bear on their fields: 'restoring to science a "lost dimension"—the feminine—whose loss has distorted human knowledge'.[9]

In what follows I shall attempt, using the example of the scientific activities of the neurologist and brain researcher Cécile Vogt (1875-1962), to answer the question of whether women's presence in research was also accompanied by processes of transformation, how we might characterise them, and what conclusions we might draw for contemporary discussion. Cécile Vogt collaborated scientifically with her husband Oskar (1870-1959) from 1899 to 1959. The two played a key role in localising brain research in the first half of the

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[4] As examples of the extensive literature, see *Wege aus der männlichen Wissenschaft. Perspektiven feministischer Erkenntnistheorie*, ed. Marianne Krull (Pfaffenweiler, 1990), especially Cornelia Klinger's essay 'Bis hierher und wie weiter? Überlegungen zu einer feministischen Wissenschaftskritik', pp. 21-56; Erika Hickel, *Frauen und Naturwissenschaften. Gesammelte Vorträge zur feministischen Wissenschaftskritik* (Braunschweig, 1994); Londa Schiebinger, 'The History and Philosophy of Women in Science', *Signs* 12 (1987): 305-32; Ludmilla Jordanova, 'Gender and the Historiography of Science', *British Journal for the History of Science* 26 (1993): 469-83; *Das Umweltproblem ist nicht geschlechtsneutral. Feministische Perspektiven*, ed. Judith Buchen, Karin Hoffmann et al (Bielefeld, 1994); *Geschlechter Verhältnisse in Medizin, Naturwissenschaft und Technik*, ed. Christoph Meinel and Monika Renneberg (Stuttgart, 1996).

[5] Cf. The report published by the Lower Saxon commission on the promotion of women's studies and the improvement of women's situation in university research and teaching: *Frauenförderung ist Hochschulreform – Frauenforschung ist Wissenschaftskritik*, ed. Lower Saxon Ministry of Science and Culture (Hanover, 1994).

[6] Donna Haraway has demonstrated this for the field of primate studies in her *Primate Visions: Gender, Race and Nature in the World of Modern Science* (New York, 1989).

[7] See, for example, *Uneasy Careers and Intimate Lives: Women in Science, 1789-1979*, ed. Pnina G. Abir-Am and Dorinda Outram (New Brunswick, NJ, 1987).

[8] See Ilse Jahn, 'Die Ehefrau in der Biographie des Gelehrten', in *Geschlechterverhältnisse in Medizin, Naturwissenschaft und Technik*, ed. Christoph Meinel and Monika Renneberg (Bassum and Stuttgart, 1996), 110-16.

[9] Schiebinger, p. 332. Typical of such an expectation of female scientists derived from object relations theory in psychology is Evelyn Fox Keller's biography of Barbara McClintock, *A Feeling for the Organism: The Life and Work of Barbara McClintock* (San Francisco, 1983).

twentieth century.[10] They pursued the ambitious project of uncovering the basis of processes of consciousness and their disorders, the neuroses and psychoses, in the cellular and sub-cellular structures of the brain, and ultimately on the material, molecular level.[11] They were looking for effective means of intervening in the brain in order to achieve a rational control of human behaviour and a heightening of mental capacities. This encompassed eugenic techniques to a certain degree, and beginning in the 1920s mainly pharmacological and neurosurgical procedures. In 1951, towards the end of their lives and against the backdrop of contemporary molecular and developmental genetics, Cécile and Oskar Vogt formulated the objective of genetic substitution therapy, which sounds very up-to-date today: biochemical substances would be transported to certain regions of the brain where, in their view, they were lacking in the case of 'mental' illnesses or socially deviant behaviour, for example criminality. The biological and medical research conducted by Cécile and Oskar Vogt operated within a purely mechanistic understanding of life and consciousness, which Rothschuh has referred to as iatrotechnical.[12]

During the first thirty years of their scientific collaboration, Cécile and Oskar Vogt's work focused largely on the fields of psychotherapy, clinical and comparative neuroanatomy as well as the *Reizphysiologie* (stimulus physiology) of the mammalian and human brain and genetic research based on evolutionary biology. By the 1920s the psychotherapeutic approach to neurological disorders had given way to a purely somatic approach. At over than 3,000 pages, the scientific publications of Cécile and Oskar Vogt were substantial, and included ten monographs of some 200 pages each between 1902 and 1944.

Before we examine these publications more closely from the perspective of the questions outlined above, let us first explore how and under what conditions Cécile Vogt came to work as a scientist at all beginning in 1900. Born in Annecy, France in 1875 as Augustine Marie Cécile Mugnier, she prepared for her *baccalauréat* examinations with private teachers and began to study medicine in Paris at the age of eighteen. There she laid the foundations for a scientific career in neurology, studying clinical experimental methods and localising brain anatomy under the neurologist Pierre Marie (1843-1940).[13] She was awarded a doctorate in 1900 at Paris for a dissertation in neuroanatomy and licensed to practice medicine. The proportion of women gaining doctorates in medicine at the time was still only

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[10] In what follows, I refer to the findings of my dissertation, in which the relevant issues are explored and documented in detail. I also include further citations of secondary literature. Helga Satzinger, *Die Geschichte der genetisch orientierten Hirnforschung von Cécile und Oskar Vogt (1875-1962, 1870-1959) in der Zeit von 1895 bis ca. 1927* (Stuttgart, 1998). A recent, detailed study of the Vogts' brain research is Jochen Richter, 'Das Kaiser-Wilhelm-Institut für Hirnforschung und die Topographie der Großhirnhemisphären. Ein Beitrag zur Institutsgeschichte der Kaiser-Wilhelm-Gesellschaft und zur Geschichte der architektonischen Hirnforschung', in *Die Kaiser-Wilhelm-Gesellschaft/Max-Planck-Gesellschaft und ihre Institute. Studien zu ihrer Geschichte: Das Harnack-Prinzip*, ed. Bernhard vom Brocke and Hubert Laitko (Berlin, 1996), pp. 349-408. In regard to the sources used and their interpretation, however, Richter's work differs from mine in significant respects.

[11] The most popular example of this undertaking was Oskar Vogt's notorious diagnosis of Lenin's brain in the late 1920s.

[12] Karl Eduard Rothschuh, *Konzepte der Medizin in Vergangenheit und Gegenwart* (Stuttgart, 1978), 417-9.

[13] Whether she attained the status of an 'interne' of the Parisian clinics, which was necessary for a research career, is neither proven nor ruled out by the sources available at present. She did, at any rate, fulfil one of the preconditions in becoming an 'externe' under Marie.

6%, thirty years after women were first admitted to medical studies.[14] In Berlin, Cécile Vogt received her medical license in 1920.[15]

In 1899, she married the twenty-nine year old German neurologist Oskar Vogt (1870-1959) and moved with him to Berlin. Thereafter, she collaborated scientifically with him in Germany for sixty years until his death in 1959. The couple had two children, Marthe Vogt (born 1903) and Marguerite Vogt (born 1913), both of whom became scientists. Cécile Mugnier had already had a daughter named Claire, whom Oskar Vogt adopted. Aside from the fact that she returned to France as an adult, at present nothing is known of this daughter's subsequent life. Cécile Vogt died in 1962 in Cambridge, England, where she had gone to live with her daughter Marthe.[16]

The basis for the couple's scientific activities were a series of research institutes formally[17] built up and directed by Oskar Vogt. The initial 'Neurologische Centralstation' in Berlin was privately funded.[18] In 1902, it was attached fiscally to the Friedrich Wilhelm University in Berlin as the 'Neurobiologisches Laboratorium' (the Neurobiological Laboratory) but was not involved in university teaching. The state-financed annual budget of 30,000 Marks for staff and materials beginning in 1902 allowed for elaborate research in neuroanatomy, including the production of thin brain sections and their illustration. From 1914, the Laboratory was expanded to include the Kaiser-Wilhelm-Institut für Hirnforschung (Kaiser Wilhelm Institute for Brain Research, KWI) and in 1931 it was completely integrated into the newly constructed Kaiser-Wilhelm-Institut in Berlin-Buch, which had been expanded to encompass some ten research departments. In this institution, which colleagues regarded as the first specialised institute for brain research in the world, all methodological approaches then available were applied, from genetics to neuropsychology, in order to discover specifically constructed sites and their function in the brain.[19] This institute also gave rise after 1945 to the Max Planck Institutes for Brain Research in the Federal Republic. In 1925, with the framework of German-Soviet scientific relations, Oskar Vogt set up a brain research institute in Moscow where Lenin's brain was spectacularly dissected and studied. After massive assaults from the National Socialists in the years after 1933, Cécile and Oskar Vogt left the KWI für Hirnforschung in Berlin, and from 1937 continued their work at the privately financed Institut für Hirnforschung und Allgemeine Biologie (Institute for Brain Research and General Biology) at Neustadt near Freiburg in the Black Forest.

The political and financial support of the Krupp family was decisive for the successful establishment of these research institutes.[20] It had begun before 1900 with F.A.

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[14] Women's proportion of awarded doctorates was calculated according to the records of the French Ministry of Public Education. *Ministère de l'instruction publique: Catalogue des theses et écrits académiques*, 4, Années 1899/1900-1903/04 (reprint: Vaduz, 1964). Cécile Vogt's dissertation bears the number 216. On the debates surrounding women's admission to medical studies in Paris, see Joy Harvey, 'La Visite: Mary Putnam Jacobi and the Paris Medical Clinics', in *French Medical Culture in the Nineteenth Century*, ed. Anne La Berge and Mordechai Feingold, Clio Medica 25 (1994), pp. 350-71; Françoise Leguay and Claude Barbizet, *Blanche Edwards-Pilliet, Femme et médecin 1858-1941* (Le Mans, 1988).

[15] C. and O. Vogt Archive, University of Düsseldorf, vol. 251. Ministerium für Volkswohlfahrt, 20 Jan. 1920. Copy, granting of medical licence on 16 Jan. 1920.'Because of her scientific achievements', Cécile Vogt was not required to sit examinations or undergo the year of practical training.

[16] Igor Klatzko, private communication, Berlin, April 1997, after a conversation with Marguerite Vogt.

[17] When I use the word 'formally' here, it is to take account of the circumstance that Oskar Vogt conducted the negotiations concerning the institutes in a formal, legal sense and was their director, but that we can assume, or cannot rule out, that Cécile Vogt had an 'informal' say in these matters.

[18] * The "Centralstation" included a practice for psychotherapy, a psychological laboratory and the department for neuroanatomy. The income was mainly generated by psychotherapy.

[19] According to Igor Klatzko, in Georg W. Kreutzberg, Igor Klatzko und Paul Kleihues, 'Oskar and Cécile Vogt, Lenin's Brain and the Bumble-Bees of the Black Forest', *Brain Pathology* 2 (1992): 363-71, 368.

[20] * Friedrich Alfred Krupp (1854-1902) was the owner of large steel factories of utmost importance for the production of railways, weapons and the establishment of the German Navy. Krupp was member of the small powerful circle of men around Kaiser Wilhelm II. He presumably committed suicide after public accusations of being a homosexual and pederast. As a passionate biologist he supported biological research and especially his

Krupp (1854-1900), becoming a psychotherapy patient of Oskar Vogt's. In the early years, this allowed the Vogts to attach their research to the political influence of a key power centre of imperial Germany, the military sector, and—against massive resistance from the scientific establishment in the fields of neurology, anatomy, psychiatry and psychology—to insert themselves into developments in the research politics of their day, in the course of which new research institutions were founded with public and private funds. This was the 'System Althoff' around 1900 and, beginning in 1911, the Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften (Kaiser Wilhelm Society for the Advancement of Science).[21] The political and financial support of F. A. Krupp's son-in-law Gustav Krupp von Bohlen und Halbach (1876-1950) was essential to the establishment of the Kaiser-Wilhelm-Institut für Hirnforschung from 1919 and the brain research institute at Neustadt in 1935-1937.

Cécile Vogt's opportunities for scientific work were directly dependent on this particular political constellation and on her marriage to Oskar Vogt. Within this framework, she was relatively free from the need to defer to scientific colleagues; she chose her research questions and methods largely in agreement with Oskar Vogt, or so their publications suggest. As Oskar Vogt had been editor since 1894 of the *Journal für Hypnotismus* [22] which was continued between 1902 and 1941 under the title *Journal für Psychologie und Neurologie* and published in lavish form by Barth in Leipzig, Cécile Vogt also had publishing options at a time when women in Prussia were not even admitted to regular university studies. In 1924, Cécile Vogt became co-editor of the *Journal*, which appeared under their joint direction after 1954 as the *Journal für Hirnforschung (Journal for Brain Research)*, published by the Akademieverlag in East Berlin.

From all this one may conclude that Cécile Vogt's scientific activities were largely determined by her cooperation with Oskar Vogt and that any restrictions to her options were ones they shared and were perhaps structured by his interests. It was only between the years 1919 and 1937 that Cécile Vogt held a formal, paid position as a scientist at the Kaiser-Wilhelm-Institut für Hirnforschung. Her position as department head (*Abteilungsleiter*) corresponded to that of an extraordinary professor. For most of her life, however, she worked without remuneration, and lived on her husband's earnings. Along with Lise Meitner (1878-1968), she was one of only two female scientists in the Kaiser-Wilhelm-Gesellschaft.[23] Cécile Vogt achieved her highest scientific recognition when she and her husband were both elected to the German Academy of Sciences Leopoldina at Halle in 1932.[24] In 1950, the two were awarded the GDR's National Prize First Class. Cécile Vogt also

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personal psychotherapist Oskar Vogt. Gustav Krupp von Bohlen und Halbach (1876-1950), son in law of F. A. Krupp continued the support for the Vogts after 1909 against various opposition, even against severe Nazi pressure. Due to his company's importance for German weapon production he was a highly powerful industrial during Weimar republic and collaborating with the Nazi regime. He was also member of the senate of the Kaiser-Wilhelm-Society for the Advancement of Science.

[21] On this, see *Wissenschaftsgeschichte und Wissenschaftspolitik im Industriezeitalter. Das 'System Althoff' in historischer Perspektive*, ed. Bernhard vom Brocke (Hildesheim, 1991); *Forschung im Spannungsfeld von Politik und Gesellschaft. Geschichte und Struktur der Kaiser-Wilhelm/ Max-Planck-Gesellschaft. Aus Anlaß ihres 75jährigen Bestehens*, ed. Rudolf Vierhaus and Bernhard vom Brocke (Stuttgart, 1990). * The term "System Althoff" is been used to characterise a new style of innovative science policy in Prussia and Imperial Germany in the time around 1900, named after Friedrich Althoff (1839-1908), who acted as the executive "Ministerialdirigent" in the Prussian Ministry for Education, Medicine and Clerical Affairs.

[22] * The full title is: Journal für Hypnotismus, Psychotherapie sowie andere psychophysiologische und psychopathologische Forschungen (Journal for Hypnotism, Psychotherapy and other Investigations in Psychophysiology and Psychopathology). The Journal for Pschology and Neurology ended in 1942 because of the war.

[23] Annette Vogt, 'Lise Meitner und ihre Kolleginnen – Naturwissenschaftlerinnen in den Instituten der Kaiser-Wilhelm-Gesellschaft Zwischen 1912 und 1945'. Preprint 46, Max-Planck-Institut für Wissenschaftsgeschichte (Berlin, 1996), p. 22.

[24] Archive of the Leopoldina, Halle. Personnel files: Cécile Vogt, Matr. Nr. 3849; Oskar Vogt, Matr. Nr. 3850. In the course of the nomination process, ten of Cécile Vogt's individual publications were taken into consideration, while in Oskar Vogt's case his joint publications with Cécile were also listed.

received honorary doctorates from the Universities of Freiburg and Jena and the Humboldt University of Berlin.

Since Cécile and Oskar Vogt consistently employed a number of collaborators in their institutes whose research was inextricably linked by both methodology and subject matter to the Vogtian enterprise,[25] one should examine the scientific work of all of these people in order to grasp the overall conception of the Vogts' research and findings. The related question of who was responsible for choosing of the various fields of research and the personnel must remain open for the moment. It is worth noting, however, that the KWI für Hirnforschung under the Vogts offered members of the first generation of women scientists after the First World War opportunities to do research. They included Stella Rose (dates unknown), the wife of Maximilian Rose, who was also employed at the KWI für Hirnforschung in the 1920s; the Vogts' daughters Marthe and Marguerite;[26] Gertrud Soeken (1897-1978), who ran the research clinic at Berlin-Buch until 1939;[27] Irmgard Leux, who conducted psychological research in the early 1930s, and the geneticists Elena Timoféeff-Ressovsky (1898-1973) and Esthera Tenenbaum (1904-1963). The last mentioned immigrated to Palestine after 1933.[28]

In summary, one can say that Cécile Vogt did not achieve a formally correct 'admission to the [university] republic of letters' around 1900, although her work gained the positive recognition of professional colleagues during her lifetime.[29] She was given the opportunity to work as a scientist outside academic conventions, under specific political conditions that had—strictly speaking—nothing to do with research issues, and because of her marriage to Oskar Vogt. An important precondition of her work was a respect for scientific research as a necessary element in an expanding industrial society that transcended political party lines. This had led after 1900 to changes in the organisation of scientific research in Germany, which included the move towards institutes outside universities. All of these factors combined, together with a husband who appreciated her scientific work, allowed Cécile Vogt to pursue her research. This overall constellation then benefited the next generation of women scientists in the Weimar Republic.[30]

Cécile Vogt's presence in scientific research may thus be regarded as evidence of a transformation process in whichcertain men welcomed the collaboration of equally qualified women during a period of expanding scientific work and an increasing division of labour within it. In times of economic prosperity the problem of reproductive work was even solved according to the male professional ideal: in the early 1930s in order to encourage the optimal use of women's scientific labour the KWI für Hirnforschung at Berlin-Buch hired cleaners to do the housework for the female technical assistants who lived on the Institute ground.[31] Even before the First World War, Cécile Vogt had been able to rely on servants for housework and childcare. In keeping with the classic gender-specific division of labour between the public and private spheres, however, men made the decisions concerning the set-up and organisation of laboratories among themselves.

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[25] See, for example, the presentation of their works in Cécile und Oskar Vogt, 'Kaiser Wilhelm-Institut für Hirnforschung in Berlin-Buch', in *25 Jahre Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften*, vol. 2, ed. Max Planck (Berlin, 1936), pp. 387-400.

[26] Vogt, 'Lise Meitner', pp. 46-53. Marthe Vogt (1903-2003) became a Fellow of the Royal Society in 1952. After a period of genetic research in Berlin and Neustadt, Marguerite Vogt (1913-2007*) moved to the United States in the 1950s and continued her work as a geneticist there.

[27] * Corrected date, 2007,

[28] Vogt, 'Lise Meitner', p. 26, and 'Die Fräulein Doktor werden immer mehr'. Preprint 45, Max-Planck-Institut für Wissenchaftsgeschichte (Berlin, 1996), pp. 67-9. She also mentions a Rosa Schragenheim here.

[29] See also J.L. Entres, 'Die Ursachen der Geisteskrankheiten. Vererbung, Keimesschädigung', in *Handbuch der Geisteskrankheiten*, vol. 1, ed. Oswald Bumke (Berlin, 1928), pp. 50-307, 111.

[30] On the KWG more generally as a particularly important workplace for women scientists of the generation after the First World War, see Vogt, 'Lise Meitner'.

[31] Interview of July 1992 in Berlin with Natalie Kromm, a former technical assistant in the genetics department of the KWI für Hirnforschung in Berlin-Buch.

It is pointless to speculate on the extent to which Oskar and Cécile Vogt may have used each other to promote their own scientific ends.[32] He knew, at any rate, how to ensure the enthusiastic collaboration of a dependent woman. Some remarks on the question of the auxiliary tasks that women performed for his scientific work, written when a young neurologist and published in the *Psychiatrische Wochenschrift* in 1899, do not show him in the most flattering light.[33] He advocated vocational training as the best medical treatment for women, who in his view suffered from nervous ailments and lost themselves in neurotic reveries and musing because they had nothing better to do. His recipe for success also provides an overview of the subordinate tasks performed by women at the Neurologische Centralstation.

> 'Through my work as a doctor, [I] first aroused patients' feelings of gratitude and affection and then used these sentiments to awaken in them a sufficient interest in work useful *to me*. [Emphasis added] I proceeded thereby from simpler to more complex work. The simplest tasks were: organising my library, preparing inventory lists, mounting, labelling and ordering the insects in my collection, labelling and ordering microscopic specimens. This is immediately followed by work in my anatomical laboratory, in the following order: mounting and fixing microscopic specimens on slides, cutting specimens with the microtome, staining and decolourising, pre-treatment and supervising work performed by others. Another set of tasks consists in the preparation of copies, translations, excerpts, and taking dictation. Yet another group of my staff work in my psychological laboratory. Here their tasks are to take minutes, serve as experimentalists and, as the highest stage, to act as experimental subjects.'

For female assistants, hypnosis by Oskar Vogt thus represented the very pinnacle of the career ladder. His methods for turning 'spoilt girls with rich parents' into capable workers were 'the awakening of all those feelings that may serve to strengthen the patient's will; now praise was indicated, now censure, now encouragement, and then the exploitation of ambition or vanity, or appealing to their gratitude towards the doctor. In addition, there was transfer to an industrious, hard-working milieu'.

For Oskar Vogt, female employment was apparently tantamount to mental health. Women's work was displaced here from embroidering a trousseau to mounting insects, from maintaining an orderly pantry to assembling a collection of scientific specimens. Women continued to orientate themselves towards a relationship with a man as head of household, and it was he who gave their tasks meaning.

Cécile Vogt's contribution to the couple's joint scientific enterprise cannot, however, be described as mere assistance to her husband. Moreover, she had begun her scientific career before they met. To be sure in 1944, when she was nearly seventy, she managed to leave a young woman geneticist with the impression that she had never done scientific work of her own.[34] The accounts of her younger colleagues, however, who worked with her for longer periods in the 1940s and 1950s at the Institute in Neustadt and were familiar with the

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[32] Cécile and Oskar Vogt's neurologist colleague Santiago Ramón y Cajal is correspondingly clear on the matter of the boons provided by a wife: 'For a man of science, the co-operation of a wife is equally necessary in youth and old age. Woman is akin to a knapsack in battle: it is easier to fight without it, but what of afterwards?' After long excurses on the harmful influence of ignorant women on science, he enviously praises the example of Cécile and Oskar Vogt, among others, as the optimal solution for men: '… this avis felix, the earnest and modest lady doctor, the enthusiastic collaborator with her spouse…' Santiago Ramón y Cajal, *Regeln und Ratschläge zur wissenschaftlichen Forschung* (Munich, 1957), pp. 94-8.

[33] Oskar Vogt, 'Ueber Beschäftigungstherapie bei functionellen Nervenkranken', *Psychiatrische Wochenschrift* 1 (1899): 245-7, 256-8. The quotations that follow are on pp. 247 and 256-7.

[34] The geneticist Prof. Gertrud Linnert of the Free University of Berlin, who after the 1944 bombing of the Botanical Institute in Freiburg had worked for a time at the Institute in Neustadt, was accordingly quite surprised in 1997 when she heard for the first time that Cécile Vogt had published independently before 1914. Her only memory of Cécile Vogt was as a wife who was constantly worrying about her husband. Prof. Gertrud Linnert, private communication, Berlin, January 1997.

publications of the two Vogts, speak quite strikingly of an indivisible Vogtian oeuvre.[35] Thus, keeping in mind the 'Matilda Effect',[36] we can assume that Cécile Vogt's contributions were very substantial indeed, for otherwise we would doubtless hear a good deal more about Oskar and his scientific greatness than about her as a 'congenial partner'.[37] These sources also describe a woman who 'worked from dawn to dusk caring for Oskar Vogt'.[38] We learn as well that it was she who took an extremely critical approach to the interpretation of anatomical findings and 'bore the brunt of organisational work,'

> '…not merely the difficult tasks of administration and financing but also the internal organisation of the institute down to the last detail. She made sure that the methods of brain study met and maintained the highest standards. The collection of animal and human brain sections, the largest in the world… was in a sense her personal property; she was familiar with each case and each section; without her help, many staff members would not have been able to use the collection.'[39]

We have no corresponding statements about Oskar Vogt. The accounts become oddly vague, however, when they touch on Cécile Vogt's intellectual abilities. 'It was not easy to get close, on a human level, to Dr Cécile Vogt's highly intellectual nature. Her profound understanding of human beings was paired with a probing analysis, which many a visitor or staff member found it difficult to withstand. This cool matter-of-fact manner concealed a warm heart, however'.[40] Clearly, many people had trouble accepting a woman scientist of equal or even superior talents. Many years after her death, the neurologist Igor Klatzko suggested that Cécile Vogt might have been the most intelligent person he ever met. He spent a good deal more time, however, reporting that she had taught him how to choose the right wine to go with his meal and that she must have been 'the most wonderful, understanding' or 'the most ideal wife' and that 'Oskar Vogt would have been helpless without her'.[41] The last statement, if applied to a wife of a scientist, would have fully discredited her as a scientist.

The woman who shines through these eyewitness accounts is a highly qualified, multifaceted scientist who tackled all necessary tasks—including caring for the well-being of the Institute director—with the exception of representing the Institute to the outside world.

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[35] Walter Kirsche, 'Oskar Vogt', *Forschungen und Fortschritte* 34 (1960): 60-3; Karl Kleist, 'Oskar Vogt zum Gedächtnis', *Der Nervenarzt* 31 (1960): 337-40; Friedrich Sanides, 'Oskar Vogt 1870-1959', in *Geschichte der Mikroskopie*, vol. 2, ed. H. Freund and A. Berg (Frankfurt am Main, 1964), 435-43.

[36] Margaret Rossiter, 'The ~~Matthew~~ (sic) Matilda Effect in Science', *Social Studies of Science* 23 (1993): 325-41. Citing a wealth of examples, Rossiter has introduced the term 'Matilda effect' quite sarcastically into the sociology of science to refer to a systematic and long-standing 'under-recognition' of women. She presents her effect as a corollary to Robert K. Merton's 'Matthew effect'. In 1968, referring to the phrase 'to every one who has will more be given' from the Book of Matthew, Merton paid homage to the phenomenon of famous scientists having the achievements of others falsely attributed to them. Speaking of women in science, Rossiter refers to the second half of the biblical citation, 'but from him who has not, even what he has will be taken away'. Rossiter named her effect after the U.S. feminist and author Matilda Joslyn Gage (1826-1898), whose work included a feminist 'Woman's Bible' she published together with other women between 1895 and 1898, and who during her lifetime described the denial of women's achievements and was herself actively forgotten. Rossiter also sought out and studied the work of women scientists in the United States in the twentieth century.

[37] Often, however, authors used this very assertion of congeniality (in the sense of kindred, suitable) as an excuse to speak only of Oskar Vogt, remarking that they were always referring to Cécile Vogt as well. Cf. Walter Kirsche, 'Oskar Vogt 1870-1959. Leben und Werk und dessen Beziehung zur Hirnforschung der Gegenwart. Ein Beitrag zur 25. Wiederkehr seines Todestages', in *Sitzungsberichte der Akademie der Wissenschaften der DDR. Mathematik, Naturwissenschaften, Technik* (Berlin, 1986).

[38] Heinz A. F. Schulze, 'In memoriam Cécile Vogt', *Psychiatrie, Neurologie und medizinischer Psychologie* 14 (1962): 357-8, 358.

[39] H. Meessen, 'Cécile Vogt, geboren am 27. März 1875, gestorben am 4. Mai 1962', *Dtsch. med. Wschr.* 87 (1962): 1674-75. Similar comments were made in 1962 by the Vogt's former collaborator Adolf Hopf, quoted in Vogt, 'Lise Meitner', p. 36.

[40] Meessen, p. 1674.

[41] Klatzo in Kreutzberg, p. 368

Reliable sources for Cécile Vogt's scientific achievements in the stricter sense of research results are her own publications as well as those of Oskar Vogt and their joint works. Here we find explicit information from Cécile and Oskar Vogt themselves about the division of labour between the two of them. A close interpretation of the scientific texts for the conditions of their development also permits us to assess the significance of the work done by each for the common enterprise. Two examples from the first thirty years of Cécile Vogt's research will also be examined to determine whether and how women's work led to transformations in scientific questions and the interpretation of findings.

Before his collaboration with Cécile, Oskar Vogt worked as a psychotherapist and also made a name for himself as a hypnotist. In the first decade of the twentieth century, the two Vogts became sharp critics of Freudian psychoanalysis, which was emerging at that time.[42] In the years before the First World War, Cécile and Oskar Vogt, together with their collaborator Korbinian Brodmann (1868-1918), presented a hitherto unknown cellular differentiation in mammalian and human brains, which they interpreted functionally. In 1902 and 1904, Cécile and Oskar Vogt had published elaborate atlases of the fibre connections in the human cerebrum and that of some mammals, while in 1903 Brodmann had begun with the comparative 'cytoarchitectonic subdivision' of the cerebral cortex in mammals and humans. His findings, published in 1909, remain the basis for anatomical maps of the cortex and its division into areae even today. Cécile and Oskar Vogt published the results of their comparative animal experiments on the electrical excitability of the cortex regions in 1907, and despite substantial discrepancies, declared the areae identified by Brodmann to be functional units of the cortex.[43]

Cécile Vogt's own publications in the first decade of the twentieth century include her 1900 dissertation and her paper on the myeloarchitectonic organisation of the thalamus, published in 1909, which may be regarded as the foundation of modern research on the thalamus. In 1911, she put forward the first functional interpretation of the corpus striatum as a 'highly differentiated organ of sensory-motor regulation'. Her subsequent systematic clinical-anatomical research into certain motor disorders, including 'Vogt's syndrome', which was named after her, but also Huntington's chorea, built on these findings. Cécile Vogt located the aetiology of certain movement disorders in changes to the 'striary system' of what are now called the basal ganglia. In regard to the couple's later work from the 1920s to the 1950s, Cécile Vogt's clinical-anatomical studies were of paradigmatic significance for their claim that there would someday be a somatic explanation for all 'psychoses', including schizophrenia.

In 1925, Cécile Vogt explicitly formulated her project of using anatomical findings to develop a classification of all mental illnesses as a critique of the therapeutic pessimism of the psychiatrist Alfred Hoche (1865-1943).[44] In the late 1920s, she gained the respect of her professional colleagues with this critique of Hoche; in contrast to him, her research findings offered a starting point for eventually arriving at pharmaceutical therapies for psychiatric disorders. [45] This counter-position becomes particularly significant in view of the fact that Hoche's pessimism culminated in his notorious argument in favour of the murder of mental patients, a subject that cannot be treated here.

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[42] Cf. Christina Schröder, *Der Fachstreit um das Seelenheil. Psychotherapiegeschichte Zwischen 1880 und 1932* (Frankfurt am Main, 1995); Cécile Vogt, 'Einige Ergebnisse unserer Neurosenforschung', *Die Naturwissenschaften* 9 (1921): 346-50.

[43] On the significance of these studies in the history of brain research, see Michael Hagner, 'Lokalisation, Funktion, Cytoarchitektonik. Wege zur Modellierung des Gehirns', in *Objekte, Differenzen und Konjunkturen. Experimentalsysteme im historischen Kontext*, ed. M. Hagner, Hans-Jörg Rheinberger and Bettina Wahrig-Schmidt (Berlin, 1994), 121-50.

[44] Cécile Vogt, 'Sur l'état marbré du striatum. Neurologie, Neuropathologie, Psychologie, Psychiatrie', in *Mémoires publiés à l'occasion du jubilé du Prof. G. Rossolimo, 1884-1924* (Moscow, 1925), pp. 278-83. * The psychiatrist Alfred Hoche co-authored with the lawyer Karl Binding (1841-1920) a book pleading for the killing of patients as „life unworthy of living" in 1920 („Die Freigabe der Vernichtung lebensunwerten Lebens. Ihr Mass und ihre Form").

[45] Entres, pp. 50-307, p. 111.

Oskar Vogt's independent contribution to neuroanatomy consists in a myeloarchitectonic subdivision of the human cerebral cortex— extending beyond the work done by Brodmann— into ca. 200 regions, which he and his wife regarded as the basis and site of elementary mental functions. In addition, in 1909-1911 he derived genetic questions from the problem of the emergence of variations and species during evolution, thus creating the preconditions for the use of experimental genetic studies of insects as a model system for questions about the structure and functions of the brain. In the 1920s, a department of genetics, which would prove important in the history of biology, was also set up at the Kaiser-Wilhelm-Institut für Hirnforschung under Nikolai W. Timoféeff-Ressovsky (1900-1981)and in co-operation with his wife Elena A. Timoféeff-Ressovsky (1898-1973). Cécile Vogt's clinical-anatomical work on the corpus striatum facilitated the integration of genetic issues into brain research.

The functional interpretation of the architectonic sub-division of the cortex as well as of the corpus striatum are both connected with scientific definitions of femininity. Cortical architectonics replaced the notion that absolute brain weight and distribution, size and amount of sulci were measures of intellectual ability, measures that had put women at a disadvantage. In 1927, Cécile Vogt explicitly addressed the question of the relationship between brain anatomy and women's intellectual capacity. In her view, women's intellectual inferiority could not be deduced from the functional interpretation of brain structure using architectonics and accordingly 'woman as such' could not be excluded from any profession.[46] Cécile Vogt interpreted her and Oskar Vogt's findings here in the same way in which she had rejected previous scientifically based notions of femininity. Cortical architectonics, however, continued to offer the possibility of looking for supposedly natural differences and hierarchies among human beings.[47]

Cécile Vogt's experiments on the corpus striatum were directly connected with the understanding of hysteria in her day. An explanation of this relationship between models of femininity and brain structure requires us to go into some detail.

Oskar Vogt worked as a psychotherapist at least until the First World War. Like Freud around 1895, he used a form of the cathartic method, combined with suggestion therapy. In 1911, criticising Freudian psychoanalysis, Cécile and Oskar Vogt rejected the repression of unconscious desires as the cause of neuroses. Rather, they saw the inability to forget certain affective experiences as pathogenic. Cécile Vogt coined the term dysamnesia for this, and saw its roots in the particular constitution of certain regions of the brain. In 1919, Cécile and Oskar Vogt postulated that the pathological substrate for hysteria might be found

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[46] This interpretation was not published by Cécile Vogt herself, but cited by Agnes von Zahn-Harnack as an argument against the still common claim that women lacked a certain cognitive capacity. Agnes von Zahn-Harnack, *Die Frauenbewegung. Geschichte, Probleme, Ziele* (Berlin, 1928), pp. 153-5; see also the extensive discussion in Helga Satzinger, 'Das Gehirn, die Frau und ein Unterschied in den Neurowissenschaften des 20. Jahrhunderts: Cécile Vogt (1875-1962)', in *Geschlechterverhältnisse*, ed. Meinel and Renneberg, 75-82. * Agnes von Zahn-Harnack (1884-1950) was an activist of the women's movement in Weimar Germany. Belonging to the first generation of women admitted to university she studied Theology, German and English philology in Berlin and got a doctoral degree. She was a founding member of the German Federation of University Women („Deutscher Akademikerinnenbund") in 1926 and acted as the president of the Federation of German Women's Associations (Bund Deutscher Frauenvereine) in the years 1931-1933, which dissolved itself under Nazi pressure. Author of two books on the Feminist Movement and its history, she fought for equal rights for women. Her father Adolf von Harnack was one of the founding figures and the first president of Germany's most prestigious research institution, the Kaiser-Wilhelm-Society for the Advancement of Science in the years 1911-1930.

[47] This formed the basis for the collection and study of 'elite brains' in the Vogts' research and for the attempts to find specific differences in various genetically defined population groups in the Soviet Union.

in the corpus striatum.[48] In 1920, they formulated the idea of intervening at this site with the aid of specifically active chemical substances.

In her 1921 paper 'Ergebnisse unserer Neurosenforschung' (Results of our Research on Neurosis), Cécile Vogt described the studies of the corpus striatum as a contribution to understanding the 'mechanism of emotional effects'. In order to explain what the corpus striatum might have to do with hysteria, we need to bring together two elements of the Vogts' research. Even before 1900, Oskar Vogt had interpreted hysteria as a nervous disorder, which was accompanied by paralysis and anaesthesia. In the Vogts' view, hysteria was a disorder produced by sensations and emotions (the German term "Gefühle" includes sensations and emotions). In 1911, in the corpus striatum, Cécile Vogt had discovered a site of sensory-motor regulation in the brain. In keeping with her and Oskar Vogt's concept of psychotherapy, which was orientated towards associationist psychology, and their understanding of brain processes as an ensemble of reflexes, in 1921 she described movements as opportunities for the 'release of psychophysical tension'. If release was impossible at the time of the affective experience, the tension adhered to the corresponding 'safety valves', led to pathological dysamnesia. The reasons for such dysamnesia could reside in the power of the experience and the associated emotion but also in the pathological constitution of the brain region in question. In both cases, the site in the brain where chemotherapeutic intervention might be possible was decisive.

We can now understand Cécile Vogt's reformulation of hysteria as a problem of the structure and function of the corpus striatum as a means of undermining the misogynist views of her professional colleagues who regarded hysteria as a 'natural developmental tendency of woman' or simply as femininity. [49] Her somatic interpretation of hysteria accordingly corresponds to a certain de-pathologisation of woman; it was still feelings that were pathogenic, but they were no longer bound to the sex of the sufferer—there is no mention of a gender-specific structure of the corpus striatum in the texts of Cécile and Otto Vogt.

How then might we characterise the transformation processes in scientific research produced by the activities of women that feminist scholars have been seeking? To the extent that it is a matter of 'restoring to science a "lost dimension"—the feminine', this proves to be a highly dubious and contradictory undertaking.

Femininity as an obligation to perform particular reproductive tasks went unchallenged, even if a certain degree of relief was available from time to time. By taking care of the Institute and her husband, Cécile Vogt lived with the attendant double burden and the danger of losing her recognition as a scientist as a consequence. On the level of the scientific definition of femininity, the research of Cécile and Oskar Vogt reveals a clear interaction between science and gender relations. We can take it as a given that the female scientist's personality exerted a gender-specific influence on the interpretation of research findings. In her efforts to resist discriminatory preconceptions about women, Cécile Vogt however remained doubly locked into the paradigm of contemporary science. First, she shared the notion, now criticised as biologistic, that 'the nature of Woman' could be —objectively—fixed with the help of scientific findings. In her interpretation, too, femaleness remained a phenomenon subject to scientific determination. Biology continued to define social reality for women. Second, Cécile Vogt used a highly reductionist understanding of psychic processes and disorders that referred back to molecular processes, with roots in nineteenth-century biological and medical science. Precisely by remaining within this dual paradigm, Cécile Vogt was able to reject gender-specific preconceptions and legitimise her own existence as a female scientist. Moreover, her molecular understanding of mental

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[48] Cécile and Oskar Vogt, 'Zur Kenntnis der pathologischen Veränderungen des Striatum und des Pallidum und zur Pathophysiologie der dabei auftretenden Krankheitserscheinungen', *Sitzungsberichte der Heidelberger Akademie der Wissenschaften, Abt. B, Biologische Wissenschaften*, 14. Abhandlung (1919): 1-56, 55.

[49] Esther Fischer-Homberger, *Krankheit Frau. Zur Geschichte der Einbildungen* (Darmstadt, 1984), p. 113; and Regina Schaps, *Hysterie und Weiblichkeit. Wissenschaftsmythen über die Frau* (Frankfurt am Main, 1992).

disorders enabled her to awaken hopes for new psychiatric therapies that were viewed positively in her day. Like her professional colleagues, she thereby arrogated to herself the societal power of scientists and medical doctors to determine who was healthy or sick, socially desirable or undesirable.

No transformation of the natural sciences and the associated field of medicine occurred in regard to these central elements due to the activity of a woman. Cécile Vogt's scientific work did, however, contribute to upholding her research field's claim to objectivity and gender-neutrality. For today's debate about possible transformation processes in the sciences, this finding suggests that we should be asking questions not about the effects of women and their allegedly genuine femininity, but rather about gender relations and other contemporary social conditions that came together to determine the nature and direction of scientific research at a given period. In the case of Cécile Vogt's work, we still need to explore the interlocking questions of whether and to what extent gender relations that disadvantaged women helped to define a molecular, mechanistic understanding of consciousness and life processes on the one hand, and why this understanding resisted transformation on the other.

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