



A life in science – marriage as an epistemic relationship and the joint scientific persona of Astri and John Runnström

Kirsti Niskanen

Stockholm University

Abstract

This article analyses an unpublished (auto)biographical account by Astri Runnström, wife of the internationally renowned Swedish zoologist John Runnström (1888-1971). Runnström pioneered his research area in Sweden, experimental zoology and cellular physiology. His research was based on long, recurring stays at marine biological stations in Sweden and abroad. Astri Runnström (1897-1978) accompanied her husband on these stays and worked as an assistant in his laboratory, without compensation and without ever gaining recognition in the creation of his successful career. I argue that Astri Runnström's biography on John can be read as an autobiographical narrative, with the aim of negotiating Astri a place in her husband's scientific legacy. Astri Runnström's textual strategy was to create a joint scientific persona for the two of them and present marriage as an epistemic relationship, without which John Runnström's scientific achievements would not have been possible to carry out.

Keywords: biography, marriage, gender, joint scientific persona.

Sammanfattning

I denna artikel analyseras en opublicerad (själv)biografisk berättelse av Astri Runnström, hustru till den internationellt kända svenske zoologen John Runnström (1888-1971). Runnström var pionjär inom sitt forskningsområde i Sverige,

experimentell zoologi och cellfysiologi. Hans forskning byggde på långa, återkommande vistelser på marinbiologiska stationer i Sverige och utomlands. Astri Runnström (1897-1978) följde med sin man på dessa resor och arbetade som assistent i hans laboratorium, utan ersättning och utan att någonsin få erkännande i skapandet av hans framgångsrika karriär. Jag hävdar att Astri Runnströms biografi om John kan läsas som en självbiografisk berättelse med syftet att förhandla Astri en plats i sin mans vetenskapliga arv. Astri Runnströms textstrategi var att skapa en gemensam forskarpersona för de två och framställa äktenskapet som en epistemisk relation utan vilken John Runnströms vetenskapliga landvinningar inte hade varit möjliga att genomföra.

Nyckelord: Biografi, äktenskap, genus, gemensam forskarpersona.

When Astri Runnström finalized a biographical account of her husband, the Swedish zoologist John Runnström, on the eve of 1 May 1973, it had been just over two years since he'd died. His academic working life had stretched from 1914, when he defended his dissertation at Stockholm University, to 1955 when he retired.¹ John Runnström (1888-1971) was a prominent researcher and research leader with an international career, a member of the Royal Swedish Academy of Sciences and other prestigious scientific societies in Sweden and abroad.² He continued his research after retirement and was in the process of editing a scientific article when he died of a blood clot in January, 1971.³

The text by Astri Runnström (1897-1978) is not a traditional biography. It is a 69-page, unpublished essay without chapter divisions or intermediate headings. When it was finished, she left it to the institute that was John Runnström's life's work, the internationally known Wenner-Gren Institute at Stockholm University. The essay was preserved there until it was recently submitted to the Royal Swedish Academy of Sciences' historical archives.⁴

In the essay, Astri Runnström gives no motivation as to why she wrote it. However, the underlying message is clear. Her story is a performative act, intended to be read by John's colleagues and, possibly, by the wider scientific establishment in Sweden.⁵ The text is a third-person narrative in which Astri Runnström constructs the image of her husband as a researcher and academic leader – his scientific persona. It is obvious that she wants to take the reader behind the scenes and tell 'how it really was,' give her own picture of John Runnström's scientific activities. This means that we get a private, inside perspective on John Runnström's academic life. She describes not only

his successes but also academic intrigues, coteries, rivalry and jealousy behind the public façade, and she sneers at her husband's academic opponents and enemies. However, on a personal level, Astri Runnström's story fulfills a deeper identity-creating purpose: her desire to portray herself as a co-creator in John's scientific work and career. The text can thus also be read as an autobiographical narrative that constructs Astri Runnström's life in relation to her husband's academic activities, as part of a joint scientific persona that she constructs in her essay.⁶

In this article, I examine how Astri Runnström uses the biographical narrative to negotiate a position for herself as a scientific collaborator with her husband and how she thus constructs a joint scientific persona for the couple. The question of what it takes to be a scientist has traditionally been answered in the history of science literature through studies of the lives and deeds of individual (male) researchers, until the social constructivist turn changed the way on how we think about the nature of scientific knowledge and who is involved in its making.⁷ More recently, research on couples in science and on domesticity has focused on collaborating couples, on women's and men's career opportunities in academic and creative environments, and on the role of family and home in scientific work. Sometimes the focus has been on the importance of marriage in the creation of the couple's common life work, sometimes on the woman's scientific work behind the more publicly recognized man.⁸ An important insight in this research is that science presupposes life choices that have often been considered private, but without which the scientific activity would not have been possible to carry out.⁹ Through Astri Runnström's life story about John, their case can be read as a counter-narrative to the traditional history of science, to stories about scientific heroes and the lonely (male) genius. Her story can be read as a relocation of where and how science is done as well as how the story of a successful scientist's work and career should be written and perceived.

I begin by giving a background to Astri Runnström's biography of John, the scientific environments that shaped his career, how Astri became his scientific companion and how she constructs John Runnström's scientific persona. Then I analyze how Astri Runnström presents herself in the biographical description of her husband and how she constructs a joint scientific persona for the two of them. I argue that Astri Runnström portrays marriage as an epistemic relationship¹⁰ – that she perceived herself as a producer of knowledge, even though she was not a scientist – and that the purpose of her biographical presentation is to establish a link between knowledge-creating processes and the couple's organization of marital life as a whole, where work and private life were intertwined.

A time of transition

The biography begins with Astri Runnström telling briefly about John's background in Stockholm's lower bourgeoisie, his father's bakery enterprise, his studies, scholarships and the first journeys abroad, the struggle for professorships in the 1920s and how he finally became professor of zoology at Stockholm University in 1932. Otherwise, her story contains few biographical facts about John and almost nothing about herself and their daughters Vera and Elsa, born in 1919 and 1922. The main part of the text is about John Runnström's academic activities and Astri's role in it between the 1920s and 1950s. The text ends with a detailed account of the last weeks of John Runnström's life when he died of (probably) incorrectly treated pneumonia, accompanied by a blood clot.

Unlike many other prominent researchers and members of the Royal Swedish Academy of Sciences, there are no personal archives on John (and Astri) Runnström. In other words, the reader of Astri's text knows almost nothing about the narrator, the historical 'I' Astri Runnström.¹¹ There are no surviving private letters or other documents, no family albums, and we have no idea how the Runnströms lived for most of their marriage, who they socialized with in private, what was in their library, nor what they read and were influenced by. In short, we know almost nothing about John and Astri Runnström's life outside the academic contexts she has chosen to describe in her text.¹² Instead, the focus of the story is the life in science that the couple lived together: the lifestyle they created, with John's academic career as an economic and social foundation.

John Runnström was a pioneer in his field of research in Sweden. His research interests were experimental zoology and cellular biology, with a focus on developmental biology: the processes that lead from conception, i.e. the fertilized egg, to the formation of the entire organism. Realizing that the underlying cellular and molecular mechanisms would be the same – or at least very similar – in all animals from worms to humans, he chose to study the general developmental processes in fertilized sea urchin eggs. He conducted and developed his first sea urchin studies at the Marine Zoological Station in Kristineberg on the Swedish west coast. These were then accompanied by experiments at similar stations in Bergen in Norway and in Monaco, recurring stays at the Stazione Zoologica in Naples, and, for a few years, stays at Roscoff in Brittany and Woods Hole in Massachusetts on the US East Coast.¹³

John and Astri Runnström became a couple in a time of transition. They met in 1916 and married the following year, a few years before Swedish women gained the right to vote, financial independence within marriage and the right to apply for higher

public positions on the same terms as men. John's academically active years, between the 1920s and 50s, were a time when educated women entered the labor market. However, there were many obstacles to women's labor market participation, especially at universities. It was not until 1926 that the formal institutional discrimination that prevented Swedish women from applying for positions as lecturers and professors at state universities ended, but the hidden, informal discrimination, built into the gender discourses and academic hierarchies of the time, remained strong.¹⁴ The share of women who defended their dissertations at Swedish universities and colleges of higher education increased by about one percent between the 1920s and 1950s, from about four to five percent.¹⁵ Most academically educated women were humanists, and the natural sciences distinguished themselves as a field with a large female deficit: only eight women defended a PhD thesis in natural science disciplines between 1920 and 1950, and only two of them pursued an academic career and became associate professors.¹⁶

Women were also found in the scientific environments, though mainly in assistant positions and as wives and co-workers with their husbands.¹⁷ Knowledge production in sciences, with measurements and laboratory experiments, is based on credibility and trust. A researcher must be able to trust that co-workers do not destroy or distort material on which the achieved results are based. The scientific support systems were undeveloped during this time, and in the absence of positions and funds for hiring assistants, collaborators and assistants were recruited through informal networks, often within the researchers' own families. Assistants were a gray area in academic labor.¹⁸ Through her marriage to John, Astri became one. The Runnström couple thus followed a gendered institutional practice that had been established in scientific environments, both in Sweden and abroad.¹⁹ But what kind of life did Astri Runström marry into, after meeting the nine-years-old John in 1916?

Astri as John's companion and assistant - science as a lifestyle

'It has always been a double-edged sword to travel around to help John and leave the children at home. Much bitterness incurred with it.'²⁰

Only in a couple of places in the biography does Astri Runnström comment on her and John's family life. In the two sentences above, she suggests that there was a conflict between his scientific work – which she shared with him – and the needs of the children. The background to Astri's comment can be traced in the development towards experimental approaches that took place in zoology during the late 1800s and

early 1900s – a change which meant that the zoologists worked at marine biological stations abroad for long periods of time.²¹ Questions about development, heredity and metabolism replaced natural history as the dominant research approach. Zoology was one of the branches of science that was long considered a ‘descriptive’ science, according to Raf de Bont, who researched the history of science of this period.²² John Runnström himself describes this development in a memoir about Stockholm University. In 1906, when he began his studies, education and research in zoology was dominated by Professor Wilhelm Leche, who had held his chair since 1884.²³ His focus was on the comparative anatomy of mammals. On his own and through international journals in the Royal Academy of Sciences’ library, John discovered ‘the new zoology’ which, among other things, dealt with development mechanics and cell physiology. He was captivated by what he read and became convinced that these areas should be included in the zoology’s educational program in Stockholm as well, and as a result, he focused his research on these fields.²⁴ In Europe, researchers who advocated for experimental zoology had, since the middle of the nineteenth century, started journals and developed broad research programs that included morphological and evolutionary studies of marine invertebrates as study objects and with the microscope as an ‘iconic instrument,’ as de Bont puts it.²⁵

Runnström worked on sea urchin studies at marine zoological stations during a large part of his research life. Many physiological and biochemical processes that represent the life processes are in principle common to different groups of animals.²⁶ Marine animals proved to be suitable for experimental analyses of general life functions, with the result that the founding of marine biological research stations became a scientific movement in Western Europe and the United States during the second half of the nineteenth century.²⁷ In Sweden, Kristineberg’s marine zoology station opened in 1877. It was initially focused on marine biological research (fauna, systematics, zoophysiology and botany) but welcomed all researchers. From the 1910s onwards, the station was visited by researchers with a focus on applied sciences such as neuroanatomy, nerve physiology and fertilization processes, and John Runnström was one of those researchers. He had been interested early on in how the fertilized egg divided and the processes that are active in the first stages of embryo development and differentiation. The sea urchin egg, which was abundant in the sea at Kristineberg, had properties that made it an excellent experimental object in this part of experimental zoology. Both Runnström’s and his students’ work in the field received international attention.²⁸

Europe’s most famous marine biology station in the late 1800s and early 1900s was the Stazione Zoologica in Naples. Even John Runnström found his way there. The

station had been started on the private initiative of the German zoologist Anton Dohrn in 1874. Marine biological stations were often placed in locations where research interests coincided with popular tourist trends.²⁹ This applied to the Stazione Zoologica, which was founded as a place for science and tourism. The palace-like station building was located on a promenade on the beautiful Bay of Naples, known for a species diversity that attracted scientists. At the bottom there was an aquarium with marine animals, open to tourists, and on the second floor laboratories, living rooms and resting places. The research organization was innovative, with a division of labor and a management attitude that streamlined scientific work. The researchers did not perform any field work; the marine material was delivered to the station by local fishermen, sorted by assistants in a sorting room and distributed to the researchers' tables. The enterprise was funded through donations and a 'table system', which meant that governments and scientific institutions rented tables at the station. The system functioned as a selection mechanism whereby scientific academies chose the researchers who were placed there. Stazione did not accept students and amateurs but was a place for distinguished researchers, for laboratory biology and experimental zoology and encouraged international exchange of laboratory techniques. It was given the epithet 'a biologist's Mecca' and played an important role in biologists' identity formation. The norm was a stay of a couple of months to effectively complete experiments for a publication and to combine research with holidays. Naples had a well-developed tourist infrastructure with sightseeing, volcanoes, antiques and opera.³⁰ It was common – as Astri Runnström describes in a pictorial way in her biography – for visiting researchers to bring along their wives as collaborators or as companions for the stays.³¹

Some renowned scientists stayed at the Stazione for long periods, returning for many years and helping to reinstate the station's scientific status, which was decimated during the First World War when the scientific contacts between Germany and Italy were broken. John Runnström belonged to this group of scientists. He had applied for a table as early as 1911, while writing his dissertation thesis, but was refused because Sweden had not reserved a table at the station.³² In 1922, the opportunity finally came to go to Naples, 'which had always been John's dream,' as Astri Runnström writes, with the help of a grant from a Swedish foundation.³³ John was allowed to rent a table for six months, and another Swede, Sven Hörstadius, joined in the spring. At John's request, Astri came along to help with technical laboratory work. They traveled from Stockholm to Italy through war-torn Germany in December, 1921. Astri returned to Stockholm in the early summer of 1922. She had been ill with dysentery and was pregnant with the couple's second child. Their eldest daughter

Vera, two years old, was living with Astri's mother and an acquaintance of hers. John stayed until July when his contract expired.³⁴ The Runnströms then returned to Naples for several four- to five-month stays between 1926 and 1929. Since the sea urchin material there deteriorated, John decided to work during a few summers at the marine biology station in Roscoff, Brittany. Then, in 1934, they worked for almost a year at the Rockefeller Institute in New York and at Woods Hole.³⁵ For the next decade, John was busy building up his own research institute in Stockholm, but after World War II, the Runnströms returned to the Stazione Zoologica, 'the Mecca of our youth,' as Astri Runnström called it.³⁶ The station had then been reorganized and received financial support from the Italian state, the Rockefeller Foundation and UNESCO. The Swedish Science Research Council and the Wenner-Gren Institute also supported the station with grants for technical equipment.³⁷ The Runnströms worked regularly in Naples from 1948 to 1970, usually in the company of younger colleagues and assistants, interspersed with journeys abroad and stays at Kristineberg, where John was director for some years after his retirement.³⁸ Thus, starting in the early 1920s, travel and life at research stations became a lifestyle that Astri and John Runnström shared. Ariane Dröscher quotes in 'The Naples Station as a special place of biological research' a letter from John Runnström to Reinhard Dohrn in Stazione Zoologica's archive. John wrote as early as 1930 that he no longer felt quite at home in Sweden and that after his long stays in Naples, he had become 'a strange Nordic-Mediterranean hybrid.'³⁹

How, then, did Astri Runnström benefit from her partnership with John? Travel to and stays at the various marine biology stations and research institutes abroad, especially in Naples, occupy a large part of her biographical essay. Astri had no scientific education – she was a primary school teacher – and she did not work in her profession after marrying John. Her essay suggests that in terms of work, the travels and the collaboration with John were emancipating for Astri, at the same time as they laid the foundation for her deep identification with his scientific work. 'The laboratory' was established during the second half of the nineteenth century as the place *par excellence* for scientific excellence, separated from the physical environment and representing the realization of the ideals of objectivity advocated by the scientific community.⁴⁰ The marine biology stations were a cross between laboratory science and field studies. At the stations, researchers moved about more informally, mingling with family members, tourists and locals, as Astri describes in the essay. The laboratories were characterized by a division of labor and hierarchies, with women in assisting positions.⁴¹ The hierarchies manifested, for example, at the Stazione's tea gatherings in the afternoon where it was, according to Astri, important to find a seat at the right table to indicate one's status.⁴² However, beyond the formal hierarchies that prevailed

at universities, the station life also offered an opportunity to negotiate for a different, more equal position. Astri Runnström took the opportunity to do that. Her role in John's work changed during their stays in Naples, from performing technical tasks to managing sophisticated laboratory equipment. She describes in detail a conflict that arose with one of John's research assistants in 1928, a person who lacked the virtues and qualities required of a scientific co-worker – accuracy, honesty and loyalty – which laid the foundation for reliable results. The assistant in question was careless in keeping records of the test results and careless with the laboratory equipment. She smashed precious manometers with glass vessels, refused to wash the glasses and had acquaintances as frequent visitors to the laboratory, especially on payday at the end of each month. The assistant had to quit her job, and John and Astri solved the problem by teaching Astri to master the Warburg technique, which John at the time was working with. From 1929 she worked regularly as his assistant during their stays abroad as well as in John's laboratory in Stockholm.⁴³ In documents of the Rockefeller Foundation, which from the beginning of the 1930s funded John's research, Astri is frequently mentioned as his co-worker.⁴⁴

In terms of lifestyle, both Astri and John Runnström entered an exclusive cosmopolitan world that few people in the 1920s had access to. Traveling and scientific work in different contexts, 'circulation' in Kapil Raj's terminology⁴⁵, change a person's identity, thus shaping one's persona. The individual does not remain singular and coherent, making him or her inclined to negotiate and acquire multiple identities.⁴⁶ During their stays abroad, the Runnströms spent time with couples who lived under similar circumstances, with whom they could identify and some of whom became lifelong friends. Leisure outside the laboratories was filled with encounters with people with different life stories, with concerts, tours and good meals. Naples, for example, accommodated a Russian diaspora with famous cultural figures and scientists as well as a group of Swedes with eccentric life styles, which Astri vividly describes in her essay.⁴⁷ In the United States, they spent time with scientific couples who had left Germany and sought a new life in the American academic world. That made an impression on both Astri and John.⁴⁸ During World War II, Runnström's laboratory became a haven for scientists fleeing Germany and Eastern Europe, and he negotiated with the government and the Minister of Social Affairs to arrange funding for the refugees' subsistence.⁴⁹ 'It was extremely interesting and enriching for us to meet so many different kinds of people with such different lifestyles and opinions, compared to what we were used to in Sweden. It is useful to get out to other parts of the world and see something else,' comments Astri when she talks about their time in the US.⁵⁰

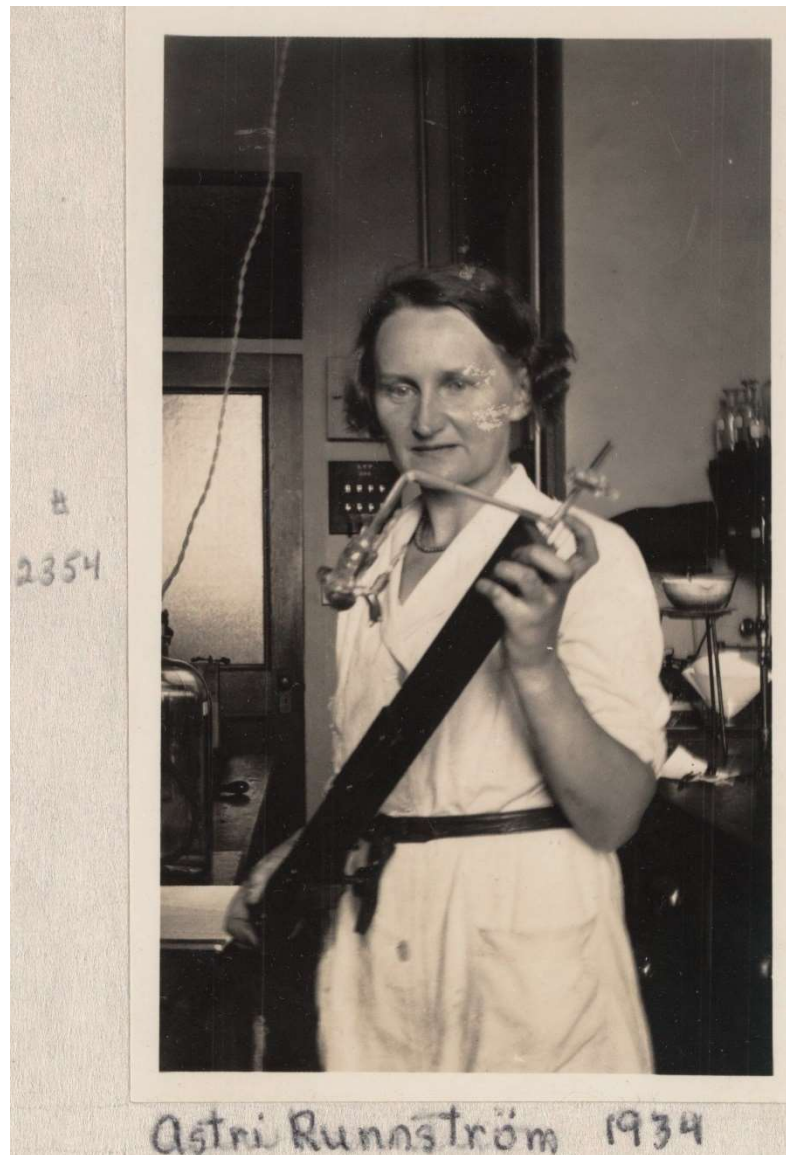


Figure 1. *Astri Runnström standing in a laboratory with a large instrument in her hand, Marine Biological Laboratory, Embryo Project Encyclopedia 1934.*⁵¹

‘His object became, for him, like part of himself’ – John Runnström’s academic life through Astri’s eyes

The scientific persona can be seen as a way to conceptualize the relationship between ‘a researcher’s being in the world’ and the ideas the individual produces.⁵² In her essay, Astri Runnström describes and constructs her husband’s scientific persona, both as an inherent identity and as an adaptation to the institutional conditions that shaped his career. In a biographical plot where choices in youth destine the person for a future professional life, she creates a narrative that John, already as a young man, was

fascinated by nature and its mysteries. He obtained a microscope when he graduated from secondary school (*gymnasium*), which his careless brother then sold to a pawnshop during John's research stay in Monaco and which he never regained. She says that John planned to study philosophy but decided that, as a basis for these studies, he needed factual knowledge and therefore decided to study science, which he then fell for.⁵³ Astri also describes sea urchin research as a deeply internalized part of John's person. When, in 1940, after working on other issues in the 1930s, he returned to the marine zoological station in Kristineberg and rediscovered the sea urchin material, Astri writes that '[...] until his death he [John] was captivated by these problems, and his objects became, for him, like a part of himself.'⁵⁴ In line with her interpretation of research as a deeply personal part of John's identity, in academic battles, Astri sided against those who criticized John's research, thus constructing a joint persona for the two of them. She shows no understanding that John's disciples and younger associates needed to steer away from their teacher's work and establish their own, independent research fields, when she describes incidents of academic strife and rivalries.⁵⁵ She is instead deeply offended when John's research on sea urchins was criticized by colleagues in the mid-1950s, when he was about to retire. She defended his research work by pointing out that John received continued funding from the Swedish Research Council for Science and the Royal Swedish Academy of Sciences, and that his work was internationally acclaimed and appreciated.⁵⁶ In defending her husband, she was also defending the joint scientific persona she created for the two of them.

Astri Runnström's account of John's academic life is a biased one, characterized by her experiences and the part of John's activities that she shared with him; it is not an attempt to draw a comprehensive picture of his work. John was not only a researcher but also a family provider, and the lack of money and the efforts to obtain funding for research and travels abroad is a recurring theme in the essay. John started his long academic career at a time when state research councils did not yet exist in Sweden – they were founded in the 1940s.⁵⁷ Until the 1950s, his work and the maintenance of his staff depended on private donations and scholarships, and the fact that he developed into a successful research entrepreneur marked his entire career. Extra-academic funding created opportunities, but through expectations, requirements and norms set for researchers and research environments, research funders also contributed to shaping John Runnström's (and his associates') scientific personae.

Among the formative, persona-creating institutional events Astri describes was one of the first major scholarships that John received in 1912. This meant that he was invited as a doctoral student to do research at the Musée Oceanographic in Monaco.

He stayed there for two years, learned French and wrote his dissertation in French. In this way, his international career was marked out from the beginning.⁵⁸ The lack of money could also be about minor but economically important and professionally formative experiences, such as in 1922 when John gave the first course in physiology ever held at Stockholm University. The university was poor and he had to pay for the course materials himself. 'A rabbit cost 8 [Swedish] crowns, which was a high price in proportion to John's salary,' writes Astri, especially since they were not edible due to the strong smell of ether.⁵⁹ Another important persona-building event was the scholarship that in 1922 enabled the first stay at the Stazione Zoologica in Naples, as described above. Ten years later, the road to a professorship was opened through a donation from a wealthy jeweler.⁶⁰

The most crucial institutional support was given to John Runnström from an unexpected source, namely the Rockefeller Foundation. On a journey to Roscoff in 1931, he stayed in Berlin with his colleague and friend Otto Warburg.⁶¹ Warburg had heard about the Rockefeller Foundation's ambition to create new scientific research areas at European universities. He encouraged John to take a detour via Paris and seek out Rockefeller Foundation's director Lauder Jones.⁶² John has vividly described how, well before the appointed time, he paced back and forth outside the foundation's European office on Rue de la Baume No. 20 in the 8th Arrondissement. Like many European intellectuals at the time, John's scientific networks were on the continent. He spoke fluent French and German but was worried about his poor knowledge of English. His worries had merit; Jones's 'language exceeded my worst expectations in terms of incomprehensibility,' John wrote later.⁶³ Still, the meeting was fruitful and led to the Rockefeller Foundation offering to finance a small laboratory building for John's research team in Stockholm. A life-changing meeting took place a couple of years later when the foundation's influential director of the Science Division, Walter Tisdale, visited John's laboratory. He was impressed by the group's research results and offered John funding for a guest professorship under the auspices of the Foundation. John suggested a stay at Otto Warburg's world-famous laboratory in Berlin.⁶⁴ Tisdale advised against Berlin, telling that he should go to the United States to 'see people' and work at the Rockefeller Institute of Medical Research in New York. The meeting with the Rockefeller Institute's interdisciplinary research, the colleagues he got to know and the contacts he made became a turning point in John Runnström's scientific orientation. Upon returning to Stockholm after almost a year in the United States, he explained in a newspaper interview that his aim was to create an institute in Stockholm based on the Rockefeller Institute's model, with a focus on interdisciplinary research and collaboration between biology and medicine.⁶⁵ That, too, was realized. John and

his colleagues applied for funding from the powerful Swedish Wallenberg Foundation but were rejected because the foundation at that time was focused on supporting traditional disciplinary research.⁶⁶ However, when John, with the help of contacts he had created in the US, managed to find co-financing from the Swedish businessman Axel Wenner-Gren for a completely new, interdisciplinary research institute, the Wenner-Gren Institute was opened in 1939, half funded by the Rockefeller Foundation.⁶⁷ The institute became John Runnström's life's work, as I mentioned earlier, and he led it until his retirement in 1955. The funding thus played a crucial role in the research, with a focus on interdisciplinarity and teamwork that shaped John Runnström's scientific persona and became the Wenner-Gren Institute's hallmark.

Astri's self-presentation and the couple's joint scientific persona

The question of what it takes to be a scientist has traditionally been discussed in terms of the individual, lone scientist. However, Astri Runnström's essay is both a biography of John and an autobiographical representation of her own life and work by his side. The person who writes down her story, the historical 'I' in a text, is an articulation of the subject positions that correspond to the diversity of social relationships in which the narrator is inscribed, as theorized by Sidonie Smith and Julia Watson.⁶⁸ Astri portrays herself in the text in multiple positions – as a wife, as an assistant and companion to John and, fleetingly, as a mother to the two daughters. In this position she was both privileged and marginalized. As a professor's wife and John's collaborator, she was included in his scientific world with all the privileges it entailed: travel, encounters, a social position and – over time, we can assume – a high standard of living. However, as John's informal assistant, she was excluded from the prestige, status and professional recognition she would have probably received if she had been educated and belonged to the regular workforce in his laboratory. Nowhere in the essay does Astri mention that she was paid for her work.⁶⁹ At the same time, she is referred to as his co-worker, both by John in reports to the funding agencies and by John's colleagues in his professional correspondence. An example is a letter where John reports of his work to Lauder Jones at the Rockefeller Foundation's office in January 1933: 'I started to Roscoff with my collaborators Mrs Runnström, who has assisted me in my work, Öhrström and Thörnblom. During part of the summer, Miss Foester worked with us. I continued with Mrs Runnström my work on the activation of the sea-urchin egg. We have demonstrated the presence and importance of nonoxidative breakdown processes.....'. In the same vein, he wrote to Professor Leonor Michaelis at the Rockefeller Institute of Medical Research, in advance of his

forthcoming research stay in the US: 'My wife has worked with me for a long time and I hope she can stay with me, if I come to work in your laboratory. Her aim would be only to follow my work and help me.'⁷⁰ Similar examples can be found in John's correspondence and the Rockefeller Foundation's reports up to the 1960s.⁷¹ Astri's role, however, remained informal. In only two (out of 237) of John Runnström's publications is she mentioned as his co-author.⁷²

In terms of life writing and gender, Astri's essay is reminiscent of the manuscripts by the nineteenth century upper-class women analyzed by Cynthia Huff. Huff draws attention to the importance of the manuscripts' provenance and the way they have been archived, as well as the low status that women's life writing was ascribed before the 1980s feminist turn in biographical studies. Historical manuscripts must be read in the cultural context they are linked to, taking into account that women's texts often end up in 'an ambiguous zone of authority', in Huff's words. They are important enough to be preserved, but not important enough to be duplicated and properly archived.⁷³ This applies to Astri Runnström's text which was preserved at the Wenner-Gren Institute but de-authorized as a life story by being forgotten and not becoming part of an institutionalized archive. Her essay can be read as a counter-narrative to the stories of great men's (autobiographical) lives that have traditionally been considered interesting to read about, as well as a counter-narrative to stories that have deemed the social, domestic and private as less interesting, not worth talking about. Astri mentions almost nothing about the couple's domestic life in her essay, but her descriptions of the couple's travels, her work, and the companionship in John's research highlight their private relationship – coupleness and marriage – as the context without which knowledge creation and John's scientific work was not possible to conduct. Based on the marginalized position where her work by his side was invisible, Astri's ambition, after his death, when she writes her story in the early 1970s, is to present 'a construed truth' about his academic success.⁷⁴

Just as interesting as what Astri talks about is what she omits.⁷⁵ She mentions nothing about the many prestigious assignments that John held in the scientific community: a member of the Royal Swedish Academy of Sciences, the Academy of Engineering Sciences, and the Society of Sciences in Uppsala, to name a few.⁷⁶ Furthermore, her way of avoiding talking about the couple's private and family life can be read as a way of talking back to the cultural idea of motherhood and female obligations as the woman's place in the gender complementary marital division of labor. In an almost rebellious way, she describes the many journeys and the work in the laboratories where she negotiated a position for herself as John's co-worker, as well as the cosmopolitan social life where she and John socialized with couples in the same

situation. Her own persona, alongside John's publicly recognized scientific persona, is an enactment of constant negotiations and conflicting emotions between the scientific sphere she shared with John and the children left at home. The cosmopolitan lifestyle had a price that she notes but chooses not to comment on further. In passing, she mentions two incidents that shed light on the conflicts she and John as parents faced: When they returned home from their first stay in Naples in 1922, their eldest, then almost three-years old daughter Vera refused to walk. She had been spoiled and carried by 'Aunt Gullan,' a nurse and an acquaintance of Astri's mother who was hired to take care of the child. The girl had also contracted an infectious disease that was not completely cured until long after, when she was 12 years old.⁷⁷ A severe conflict arose when the couple was planning to leave for the United States in December, 1933, when their daughters were 14 and 11 years old. John's cousin who had two boys of the same age promised to take care of the girls, but pulled out at the last moment, when the details of the stay were already nailed and tickets to New York purchased. A younger colleague of John's and his wife agreed to care for them and promised to stay in Runnström's apartment so the girls would not have to leave their home. This arrangement turned out not to work either – conflicts arose with the young employee's wife – and eventually the daughters had to live with another acquaintance during the parents' almost-one-year absence.⁷⁸

In the literature on science and domesticity, it is often pointed out that science functions as a family affair, sometimes literally and sometimes figuratively, by invoking loyalty through the socially cohesive idea of the family.⁷⁹ The family metaphors and science as a collective enterprise come into Astri's story when she describes life at the research stations and in John's research group. The narrative includes rivalries from younger colleagues, quarrels between employees, romances, divorces and human tragedies but also harmonious periods with a family-like togetherness when the collective work functioned at its best. The summer of 1935 was an example of such a period. Astri and John worked in John's laboratory in Stockholm. They rented a summer place in Jakobsberg, outside the city where their girls stayed during the summer holidays with their cousins and friends. The parents drove to Jakobsberg on the weekends, and the employees in the laboratory often came along: 'It could eventually become a complete hotel and restaurant business. But the food was cheap and we were not old and it was nice to be able to show hospitality.'⁸⁰ She uses the family metaphor on research even when they returned to Naples after the war and worked there with trusted, younger co-workers: 'It was one of our happiest times. We worked with life and desire...we were like a family, had much fun together and revived a lot of old memories.'⁸¹

Astri Runnström's main rhetorical strategy for marking her active role in scientific life, where John alone was the public figure, is to speak in terms of 'we,' which I have shown above. At some points in the text, she talks about herself in the third person or presents herself as an 'I.' But it is in the detailed descriptions of everyday life in research that she emphasizes the rhetorical 'we' and the importance she attaches to herself as John's partner and co-worker. Her text suggests, for example, that she participated in the planning of the Wenner-Gren Institute, whose organization she describes in detail, almost as if she were an employee.⁸² She also tells how she led the planning of the public social program when John Runnström organized a large international conference in Stockholm in 1947, and how she carefully handled the social events when employees and subordinates were invited home for dinners to socialize with John's international colleagues.⁸³

The most emotionally powerful expressions of 'we' in the essay are the parts where Astri Runnström comments on John's rivals, critics and scientific opponents, which strengthen the joint scientific persona she has created. Science is known as a profession fraught with conflicts. Staffan Bergwik, in his book about the history of the Swedish natural sciences, explains that this is due to the collective nature of knowledge production and that knowledge arises in groups that dispute which concepts, worldviews or instruments are considered important and correct.⁸⁴ Despite a long life in science by John's side, it seems to have been difficult for Astri Runnström to accept the conditions of science – that the struggle for careers and scientific survival was fierce even in John's immediate surroundings. The scientific battles in which John Runnström was involved could be cruel and take unpleasant forms. Astri Runnström describes some of them and names the people involved. 'Before we had not understood what jealousy and malice were about, but then and later we got to experience in abundance what it meant,' she writes when describing the time after the plans to build the Wenner-Gren Institute had been published.⁸⁵ The officers of the Rockefeller Foundation were informed of the circumstances and took a neutral position in the strife, cautiously supporting John Runnström. He explained a couple of years later in a letter to the foundation that the situation had calmed down as the young men who challenged him had taken up permanent positions at other institutions and universities.⁸⁶

Marriage as an epistemic act – Astri’s negotiation of a place in the history of science

In my interpretation, Astri Runnström’s biographical essay on her husband is an enactment, a negotiation with John Runnström’s legacy to give a truer picture of his scientific activities and her own contributions to his success story. Astri creates a joint scientific persona for John Runnström and herself by telling in detail about the couple’s travels and stays at research stations, the work in the laboratories, the social relationships that arose around and through John’s research and how she contributed to the creation of his life’s work. She describes the production of knowledge as a lifestyle, marriage as a knowledge-producing act and herself as an enabler of this lifestyle. The couple’s joint scientific persona is her creation, based on her experiences as John’s wife, assistant, companion and co-worker, and she crafted it after his death. John Runnström had no need for a joint scientific persona – he had all the qualifications in abundance to grant him a recognized and authoritative position and a celebrated legacy in the historiography of the Swedish sciences.

Colleagues who recounted John Runnström’s life and work in obituaries portrayed him as a pioneer in modern experimental biology, as a leading figure who inspired generations of students and collaborators.⁸⁷ His successor in the professorship, Olov Lindberg, characterized John as a scientific hero and a lone genius, using epithets such as ‘the first biological internationalist’ and “‘an international concept” who, with the help of big donors, a huge effort and a visionary idea,’ created the Wenner-Gren Institute.⁸⁸ Astri Runnström’s creation of the couple’s joint scientific persona can be interpreted as an act of resistance, as a way of showing that coupleness and marriage were the foundations on which John Runnström’s public life was built. Astri chose to fully identify with her husband’s scientific projects. Her position as John’s companion and unofficial workforce in his research was vulnerable – in his legacy she is mentioned as his wife and nothing more. Astri Runnström died in 1978. The fact that her biographical essay on John has only now become available for research shows that her position in the historiography of the sciences is even more vulnerable.

Works Cited

Archival sources

Center for the History of Science, The Royal Swedish Academy of Sciences

Sekreterarens arkiv, Självbiografier av KVA:s bortgångna ledamöter, vol 27c:1, John Runnström

The Foundation for Economic History Research within Banking and Enterprise

Knut and Alice Wallenberg Foundation, John Runnström, documents

The Rockefeller Archive Center

John Runnström, Documents and correspondence; Officers' Diaries

Other sources

Barany, Michael J., 'The Officer's Three Names. The Formal, Familiar, and Bureaucratic in the Transnational History of Scientific Fellowships', in: John Krige (ed.), *How Knowledge Moves: Writing the Transnational History of Science and Technology*, Chicago: The University of Chicago Press, 2019, 255–280.

Berg, Annika, Christina Florin and Per Wisselgren (eds.), *Par i vetenskap och politik: intellektuella äktenskap i moderniteten*, Umeå: Borea, 2011.

Bergwik, Staffan, *Kunskapens osynliga scener. Vetenskapshistorier 1900–1950*, Göteborg: Makadam, 2016.

Bergwik, Staffan, 'Father, Son, and the Entrepreneurial Spirit: Otto Pettersson, Hans Pettersson, and the Early Twentieth-Century Inheritance of Oceanography', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen (eds.), *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 192–214.

Bernhard, Carl Gustaf, *Kristinebergs marinbiologiska station 1877–1977*, Stockholm: Informationsavdelningen, Vetenskapsakademien, 1978.

Bont, Raf de, 'Between Laboratory and the Deep Blue Sea: Space Issues in the Marine Stations of Naples and Wimereux', in: *Social Studies of Science*, 39:2 (2009) 199–227.

Bont, Raf de, *Stations in the field: a history of place-based animal research, 1870–1930*, Chicago: The University of Chicago Press, 2015.

Cabanel, Anna, 'A Woman in a "Man Made World". Erzebét Kol (1897–1980)', in: Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 118–127.

Coen, Deborah R., 'A Lens of Many Facets', in: *Isis* 97:2 (2006) 395–419.

Coen, Deborah R., 'The Common World: Histories of science and domestic intimacy', in: *Modern Intellectual History* 11:2 (2014) 417–438.

Creese, Thomas M. and Mary R. S. Creese, *Ladies in the Laboratory II: West European Women in Science, 1800–1900: a Survey of Their Contributions to Research*, Lanham: Scarecrow Press, 2004.

Daston, Lorraine and Otto Sibum, 'Introduction: Scientific Personae and Their Histories', in: *Science in Context* 16:1–2 (2003) 1–8.

-
- Dohrn, Reinhard, 'Stazione Zoologica Napoli, in: *Notes and Records of the Royal Society of London* 8:2 (1951) 277-282. <https://doi.org/10.1098/rsnr.1951.0021>
- Dröscher, Ariane, 'The Naples Station as a special place of biological research: The case of colloid chemistry of the cell in the 1920s', in: Groeben, C., J. Kaasch & M. Kaasch (eds.), *Stätten biologischer Forschung / Places of Biological Research*, Berlin: VWB, 2005, 65–74.
- Duncan, Sarah, 'Women's International Thought in the Twentieth-Century Anglo-American Academy: Autobiographical Reflection, Oral History and Scholarly Habitus', in: *Gender & History* 33:2 (2021) 487–512.
- Ekerholm, Helena, 'Keeping a House for Science: Sofia Kristensson as Matriarch and Gatekeeper at Kristineberg Zoological Station as a Scientific Household, 1877–1889', in: *Science in Context* 28:4 (2015) 587–611.
- Ekerholm, Helena, Karl Grandin, Christer Nordlund and Patience A. Schell (eds.), *Understanding Field Science Institutions*, Sagamore Beach, MA: Science History Publications/USA, 2017.
- Elzinga, Aant, 'Universities, research and the transformation of the State in Sweden', in: Rothblatt, Sheldon and Björn Wittrock (eds.), *The European and American University since 1800*, Cambridge: Cambridge University Press, 1993, 197–214.
- Gooday, Graeme, 'Placing or Replacing the Laboratory in the History of Science?', in: *Isis* 99:2 (2008) 783–795.
- Gustafson, Tryggve, 'John Runnström in memoriam 1888–1971', in: *Experimental Cell Research* 72:1 (1972) 2–5.
- Huff, Cynthia, 'Mind the Gaps: Victorian Women Writing Subversion into the Archive', *teksty drugie* 14:1 (2020) 164–179.
- Hultin, Tore, 'John Runnström död', in: *Dagens Nyheter* (22 January 1971).
- Jackson, Catherine M., 'The Laboratory', in: Bernard Lightman (ed.), *A Companion to the History of Science*, Chichester: Wiley Blackwell, 2016, 296–309.
- Jordanova, Ludmilla, *Defining features: scientific and medical portraits, 1660–2000*, London: Reaktion, 2000.
- Kohler, Robert E., *Partners in science: foundations and natural scientists, 1900–1945*, Chicago: University of Chicago Press, 1991.
- Kohler, Robert, 'Place and Practice in Field Biology', in: *History of Science* 40:2 (2002) 189–210.
- Lindberg, Olof, 'John Runnström in memoriam', in: *Svenska Dagbladet* (23 January 1971).
- Lykknes, Annette, Donald L. Opitz and Brigitte Van Tiggelen (eds.), *For Better or For Worse: Collaborative Couples in the Sciences*, Basel: Birkhäuser, 2012.

- Markusson Winkvist, Hanna, *Som isolerade öar: de lagerkransade kvinnorna och akademien under 1900-talets första hälft*, Eslöv: Symposion, 2003.
- Nedergaard, Jan, 'Johan (John) A M Runnström', in: *Svenskt biografiskt lexikon*, 30 (1998–2000). <https://sok.riksarkivet.se/sbl/artikel/7043>. Date accessed: 16 June 2021.
- Niskanen, Kirsti, 'The Scholarly Persona Embodied – Seclusion, Love, Academic Battles and International Exchanges in the Shaping of a Philosophy Career', in Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 315–348.
- Niskanen, Kirsti and Michael J. Barany, 'Introduction: The Scholar Incarnate', in: Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 1–17.
- Nyhart, Lynn K., 'Historiography of the History of Science, in: Bernard Lightman (ed.), *A Companion to the History of Science*, Chichester: Wiley Blackwell, 2017, 7–22.
- Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen, 'Introduction: Domesticity and the Historiography of Science', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen (eds.), *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 1–15.
- Opitz, Donald L., Annette Lykknes and Brigitte Van Tiggelen, 'Introduction', in: Lykknes, Annette, Donald L. Opitz and Brigitte Van Tiggelen (eds.), *For better or for worse?: collaborative couples in the sciences*, Basel: Birkhäuser, 2012, 1–15.
- Otis, Laura, *Müller's Lab*, Oxford: Oxford University Press, 2007.
- Pauly, Philip J., 'Summer Resort and Scientific Discipline: Woods Hole and the Structure of American Biology, 1882–1925', in: Rainger, Ronald, Keith R. Benson and Jane Maienschein (eds.), *The American Development of Biology*, Philadelphia: University of Pennsylvania, 1988.
- Raj, Kapil, *Relocating Modern Science. Circulation and the Construction of Knowledge in South Asia and Europe, 1650–1900*, Basingstoke: Palgrave Macmillan, 2007.
- Raj, Kapil, 'Beyond Postcolonialism ... and Postpositivism. Circulation and the Global History of Science', in: *Isis* 104:2 (2013) 337–347.
- Richmond, Marsha L., '“A Lab of One's Own”: The Balfour Biological Laboratory for Women at Cambridge University, 1884–1914', in: *Isis* 88: 3 (1997) 422–455.
- Rossiter, Margaret W., *Women scientists in America Struggles and strategies to 1940*, Baltimore: Johns Hopkins Univ. Press, 1982.
- Runnström, Astri, 'En kort skildring av ett långt och verksamt liv. John Runnström, 1888–1971', *Unpublished manuscript* 1973, Center for the History of Science, The

- Royal Swedish Academy of Sciences: Sekreterarens arkiv, Självbiografier av KVA:s bortgångna ledamöter, vol 27c:1, John Runnström.
- Runnström, John, 'Experimentell zoologi och Wenner-Grens institut', in: *Stockholms högskola under Sven Tunbergs rektorat. Minnesskrift*, Stockholm: P.A. Norstedt & Söners Förlag, 1949.
- Runnström, John, 'Recollections of the Biological Station at Bergen', in: *Sarsia* 29:1 (1967) 81–86.
- Runnström, John, 'Published works of John Runnström, 1909–1971', in: *Experimental Cell Research* 72 (1972) 6–14.
- Shapin, Steven, 'The Invisible Technician', in: *American Scientist* 77:6 (1989) 554–563.
- Smith, Sidonie and Julia Watson, *Reading autobiography: a guide for interpreting life narratives*, Minneapolis: University of Minnesota Press, 2010.
- Smith, Sidonie, 'Construing truths in lying mouths: Truth-telling in women's autobiography', in: *Studies in the Literary Imagination* 23:2 (1990) 145–163.
- Smith, Sidonie, 'Performativity, Autobiographical Practice, Resistance', in: *a/b Auto/Biography Studies* 10:1 (1995) 17–33.
- Stanley, Liz, 'Moments of Writing: Is There a Feminist auto/Biography?', in: *Gender & History* 2:1 (1990) 58–67.
- Stanley, Liz, *The Auto/biographical I. The Theory and Practice of Feminist Auto/Biography*, Manchester: Manchester University Press, 1992.
- Tunberg, Sven, *Stockholms högskolas historia före 1950*, Stockholm: P.A. Norstedt & Söners Förlag, 1957.
- Widmalm, Sven, 'The Laboratory Society: Science and the Family in Sweden, c. 1900–1950', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen, *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 215–239.

About the Author

Kirsti Niskanen is Professor Emeritus of History in the Department of History at Stockholm University, Sweden, and principal investigator of the Scientific Personae in Cultural Encounters project. Her current research interests fall in the broad area of history of science and university history, in a feminist perspective. She is editor of the volume *Gender, Embodiment, and the History of the Scholarly Persona. Incarnations and Contestations* (Palgrave-McMillan 2021).

Acknowledgments

This research is part of the SPICE project (*Scientific Personae in Cultural Encounters*), funded by Marcus and Amalia Wallenberg Foundation. I would like to thank Johanna Gehmacher and Katharina Prager for inspiring discussions in editing the articles for this special issue and for insightful comments and criticism in completing this particular piece of work. A special thanks to Jan Nedergaard for helpful comments regarding John Runnström's scientific activities.

Notes

¹ For the sake of simplicity, I use the term Stockholm University throughout, even though *Stockholms högskola* [Stockholm University College] at that time was a privately funded university college. It functioned in practice as a university, was taken over by the state in 1960 and then became a state university.

² Hultin, Tore. 'John Runnström död', *Dagens Nyheter* (22 January 1971); Nedergaard, Jan, 'Johan (John) A M Runnström', in: *Svenskt biografiskt lexikon*, 30 (1998–2000). <https://sok.riksarkivet.se/sbl/artikel/7043>. Date accessed: 16 June 2021.

³ Runnström, Astri, 'En kort skildring av ett långt och verksamt liv. John Runnström, 1888–1971', *Unpublished manuscript* 1973, Center for the History of Science, The Royal Swedish Academy of Sciences: Sekreterarens arkiv, Självbiografier av KVA:s bortgångna ledamöter, vol 27c:1, John Runnström.

⁴ Thanks to Jan Nedergaard who gave me access to Astri Runnström's essay and who arranged for it to be archived at the Royal Swedish Academy of Sciences.

⁵ On performativity and auto/biography, see Smith, Sidonie and Julia Watson, *Reading autobiography: a guide for interpreting life narratives*, Minneapolis: University of Minnesota Press, 2010 (63–102); Smith, Sidonie, 'Performativity, Autobiographical Practice, Resistance', in: *a/b Auto/Biography Studies* 10:1 (1995) 17–33.

⁶ On the intertextuality of biography and autobiography, see the many writings of Liz Stanley, for example: Stanley, Liz, 'Moments of Writing: Is There a Feminist auto/Biography?', in: *Gender & History* 2:1 (1990) 58–67; Stanley, Liz, *The Auto/biographical I. The Theory and Practice of Feminist Auto/Biography*, Manchester: Manchester University Press, 1992.

⁷ Shapin, Steven, 'The Invisible Technician', in: *American Scientist* 77:6 (1989) 554–563; Nyhart, Lynn K., 'Historiography of the History of Science, in: Bernard Lightman (ed.), *A Companion to the History of Science*, Chichester: Wiley Blackwell, 2017, 7–22. Jordanova, Ludmilla, *Defining features: scientific and medical portraits, 1660–2000*, London: Reaktion, 2000 (85–127).

⁸ Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen, 'Introduction: Domesticity and the Historiography of Science', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen (eds.), *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 1–15; Lykknes, Annette, Donald L. Opitz and Brigitte Van Tiggelen (eds.), *For Better or For Worse: Collaborative Couples in the Sciences*, Basel: Birkhäuser, 2012; Berg, Annika, Christina Florin and Per Wisselgren (eds.), *Par i vetenskap och politik: intellektuella äktenskap i moderniteten*, Umeå: Borea, 2011, 13–43, 121–205; Coen, Deborah R., 'A Lens of Many Facets', in: *Isis* 97:2 (2006) 395–419; Coen, Deborah R., 'The Common World: Histories of science and domestic intimacy', in: *Modern Intellectual History* 11:2 (2014) 417–438.

⁹ Bergwik, Staffan, *Kunskapens osynliga scener. Vetenskapshistorier 1900–1950*, Göteborg: Makadam, 2016 (33–66).

¹⁰ Duncan, Sarah, 'Women's International Thought in the Twentieth-Century Anglo-American Academy: Autobiographical Reflection, Oral History and Scholarly Habitus', in: *Gender & History* 33:2 (2021).

¹¹ Smith, Sidonie and Julia Watson 2010 (71–72).

- ¹² Nor are the Wenner-Gren Institute's early archives between 1938 and 1987 preserved. The institute was moved to new premises and the building from 1938 was demolished. The early archives disappeared during the demolition.
- ¹³ Runnström described his work and stay in Bergen in 1914 in an article in the 1960s: Runnström, John, 'Recollections of the Biological Station at Bergen', in: *Sarsia* 29:1 (1967) 81–86.
- ¹⁴ Markusson Winkvist, Hanna, *Som isolerade öar: de lagerkransade kvinnorna och akademien under 1900-talets första hälft*, Eslöv: Symposion, 2003 (43–112).
- ¹⁵ Idem, Tabell 2, page 101.
- ¹⁶ Idem, Diagram 1, page 106, Appendix, Bilaga II, page 232–235.
- ¹⁷ Bergwik, Staffan, *Kunskapens osynliga scener* 2016 (114–118).
- ¹⁸ Idem, page 115.
- ¹⁹ Idem, page 117–118; Lykknes, Annette, Donald L. Opitz and Brigitte Van Tiggelen 2012, 1–15.
- ²⁰ Runnström, Astri 1973, 39–40.
- ²¹ Bont, Raf de, *Stations in the field: a history of place-based animal research, 1870–1930*, Chicago: The University of Chicago Press, 2015 (1–16, 23–44).
- ²² Bont, Raf de 2015 (35).
- ²³ Tunberg, Sven, *Stockholms högskolas historia före 1950*, Stockholm: P.A. Norstedt & Söners Förlag, 1957 (170).
- ²⁴ Runnström, John, 'Experimentell zoologi och Wenner-Grens institut', in: *Stockholms högskola under Sven Tunbergs rektorat. Minnesskrift*, Stockholm: P.A. Norstedt & Söners Förlag, 1949, 63.
- ²⁵ Bont, Raf de 2015 (33).
- ²⁶ Bernhard, Carl Gustaf, *Kristinebergs marinbiologiska station 1877–1977*, Stockholm: Informationsavdelningen, Vetenskapsakademien, 1978; Bont, Raf de 2015.
- ²⁷ Bont, Raf de 2015 (23–28); Bont, Raf de, 'Between Laboratory and the Deep Blue Sea: Space Issues in the Marine Stations of Naples and Wimereux', in: *Social Studies of Science*, 39:2 (2009) 199–227.
- ²⁸ Bernhard, Carl Gustaf 1978 (39–50); Kohler, Robert E., *Partners in science: foundations and natural scientists, 1900–1945*, Chicago: University of Chicago Press, 1991 (306–313).
- ²⁹ Bont, Raf de 2015 (23–28); Pauly, Philip J., 'Summer Resort and Scientific Discipline: Woods Hole and the Structure of American Biology, 1882–1925', in: Rainger, Ronald, Keith R. Benson and Jane Maienschein (eds.), *The American Development of Biology*, Philadelphia: University of Pennsylvania, 1988, 121–150; Ekerholm, Helena, 'Keeping a House for Science: Sofia Kristensson as Matriarch and Gatekeeper at Kristineberg Zoological Station as a Scientific Household, 1877–1889', in: *Science in Context* 28:4 (2015) 589; Ekerholm, Helena, Karl Grandin, Christer Nordlund and Patience A. Schell (eds.), *Understanding Field Science Institutions*, Sagamore Beach, MA: Science History Publications/USA, 2017 (2).
- ³⁰ Bont, Raf de 2015 (57–60); Bont, Raf de 2009, 199–227.
- ³¹ Runnström, Astri 1973, 12–27.
- ³² Dröscher, Ariane, 'The Naples Station as a special place of biological research: The case of colloid chemistry of the cell in the 1920s', in: Groeben, C., J. Kaasch & M. Kaasch (eds.), *Stätten biologischer Forschung / Places of Biological Research*, Berlin: VWB, 2005, 66–70.
- ³³ Runnström, Astri 1973, 11.
- ³⁴ Idem, page 12, 16.
- ³⁵ Idem, page 17–39.
- ³⁶ Idem, page 50.
- ³⁷ Dohrn, Reinhard, 'Stazione Zoologica Napoli, in: *Notes and Records of the Royal Society of London* 8:2 (1951) 278.
- ³⁸ Runnström, Astri 1973, 50–61.
- ³⁹ Dröscher, Ariane 2005, 73.
- ⁴⁰ Jackson, Catherine M., 'The Laboratory', in: Bernard Lightman (ed.), *A Companion to the History of Science*, Chichester: Wiley Blackwell, 2016, 296–309; Gooday, Graeme, 'Placing or Replacing the

Laboratory in the History of Science?', in: *Isis* 99:2 (2008) 783–795; Kohler, Robert, 'Place and Practice in Field Biology', in: *History of Science* 40:2 (2002) 191–192.

⁴¹ Bergwik, Staffan, *Kunskapens osynliga scener 2016* (114–118); Widmalm, Sven, 'The Laboratory Society: Science and the Family in Sweden, c. 1900–1950', in Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen, *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 228–234; Rossiter, Margaret W., *Women scientists in America Struggles and strategies to 1940*, Baltimore: Johns Hopkins Univ. Press, 1982, 58; Richmond, Marsha L., "'A Lab of One's Own": The Balfour Biological Laboratory for Women at Cambridge University, 1884–1914', in: *Isis* 88:3 (1997) 422–455; Ekerholm, Helena, Karl Grandin, Christer Nordlund and Patience A. Schell 2017, 3–4.

⁴² Runnström, Astri 1973, 18.

⁴³ Runnström, Astri 1973, 22–23 (26). For an introduction to the Warburg apparatus, see <https://www.youtube.com/watch?v=M-HYbZwN43o>. Date accessed: 18 June 2021.

⁴⁴ See, for example John Runnström to H.M. Miller, in Rockefeller Archive Center (RAC), RF, RG 1.1., 800D, Box 67:6; Harry M. Miller Diary, 28 January and 30 January 1935: 'Memorandum: Summer plans of Runnström and his group'; John Runnström to Frank Blair Hanson, 27 December 1940; John Runnström to H.M. Miller jr., 18 September 1945; John Runnström to Gerard Pomerat, January 1948, all in: RAC, RG 1.1. (FA 386), 800D, Box 7; Gerard R. Pomerat Diary, 16 March 1948 and 3 April 1949, RAC, RG 12, M-R (FA 393), Box 383; Gerard R. Pomerat Diary, 9 December 1960, RAC, RG 12, M-R (FA 393), Box 389.

⁴⁵ Raj, Kapil, *Relocating Modern Science. Circulation and the Construction of Knowledge in South Asia and Europe, 1650–1900*, Basingstoke: Palgrave Macmillan, 2007 (223–233); Raj, Kapil, 'Beyond Postcolonialism ... and Postpositivism. Circulation and the Global History of Science', in: *Isis* 104:2 (2013) 337–347.

⁴⁶ See, for example Niskanen, Kirsti, 'The Scholarly Persona Embodied – Seclusion, Love, Academic Battles and International Exchanges in the Shaping of a Philosophy Career', in Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 330–335; Cabanel, Anna, 'A Woman in a "Man Made World". Erzebet Kol (1897–1980)', in: Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 118–127. Barany, Michael J., 'The Officer's Three Names. The Formal, Familiar, and Bureaucratic in the Transnational History of Scientific Fellowships', in: John Krige (ed.), *How Knowledge Moves: Writing the Transnational History of Science and Technology*, Chicago: The University of Chicago Press, 2019, 276.

⁴⁷ Runnström, Astri 1973, 19–21.

⁴⁸ Idem, page 36–39.

⁴⁹ Idem, page 47–48.

⁵⁰ Idem, page 38.

⁵¹ ISSN: 1940-5030. <http://embryo.asu.edu/handle/10776/2967>. Date accessed: June 18, 2021.

⁵² Daston, Lorraine and Otto Sibum, 'Introduction: Scientific Personae and Their Histories', in: *Science in Context* 16:1–2 (2003) 1–8. For an overview of the approaches to the concept of scientific, or scholarly persona, see Niskanen, Kirsti and Michael J. Barany, 'Introduction: The Scholar Incarnate', in: Niskanen, Kirsti and Michael J. Barany (eds.), *Gender, embodiment, and the history of the scholarly persona: incarnations and contestations*, Cham: Palgrave Macmillan, 2021, 1–17.

⁵³ Runnström, Astri 1973, 4.

⁵⁴ Idem, page 49.

⁵⁵ See Otis, Laura, *Müller's Lab*, Oxford: Oxford University Press, 2007.

⁵⁶ Runnström, Astri 1973, 57–60.

⁵⁷ Elzinga, Aant, 'Universities, research and the transformation of the State in Sweden', in: Rothblatt, Sheldon and Björn Wittrock (eds.), *The European and American University since 1800*, Cambridge: Cambridge University Press, 1993, 197–214.

⁵⁸ Runnström, Astri 1973, 5–7.

⁵⁹ Idem, page 16.

⁶⁰ Idem, page 33.

⁶¹ Idem, page 33.

⁶² The Rockefeller Foundations support of John Runnström's research laboratory is also described in Kohler, Robert E. 1991 (308–313).

⁶³ Runnström, John, 'Experimentell zoologi och Wenner-Grens institut', in: *Stockholms högskola under Sven Tunbergs rektorat. Minnesskrift*, Stockholm: P.A. Norstedt & Söners Förlag, 1949, 63.

⁶⁴ For a presentation of Warburg's work, see <https://www.biologicalmedicineinstitute.com/otto-warburg>. Date accessed: 18 June 2021.

⁶⁵ Runnström, Astri 1973, 40.

⁶⁶ The Foundation for Economic History Research within Banking and Enterprise, Knut and Alice Wallenberg Foundation, S-F1-1.1.

⁶⁷ Runnström, Astri 1973, 42–46; Runnström, John 1949.

⁶⁸ Smith, Sidonie and Julia Watson 2010 (72).

⁶⁹ The extra academic funding made it possible for Runnström to expand laboratory personnel and employ scientific co-workers and assistants. In 1939, the Rockefeller Foundation demanded an account of employees who were paid with funds from the Foundation. The number (which was not the total number of employees in the laboratory) was 32 people. In this group there were six married couples. Some of the women were scientifically educated and all acted as co-workers to their husbands. Astri Runnström was not counted among the paid employees. RAC, RF, RG 1.1., (FA 386), 800D, Box 6, Walter Tisdale to John Runnström, 24 February 1939; John Runnström to Walter Tisdale, 4 March 1939.

⁷⁰ John Runnström to Lauder Jones, 11 January 1933 and John Runnström to Leonor Michaelis, 26 July 1933, both in RAC, Rockefeller University Records, Scientific staff biographical files (FA 260), Box 26. See also John Runnström to H.M. Miller, 5 September 1936, RAC, RF, RG 1.1., 800D, Box 67:6.

⁷¹ See the references in note 44.

⁷² Runnström, John, 'Published works of John Runnström, 1909–1971', in: *Experimental Cell Research* 72 (1972) 6–14.

⁷³ Huff, Cynthia, 'Mind the Gaps: Victorian Women Writing Subversion into the Archive', *teksty drugie* 14:1 (2020) 164–179.

⁷⁴ Smith, Sidonie, 'Construing truths in lying mouths: Truth-telling in women's autobiography', in: *Studies in the Literary Imagination* 23:2 (1990) 157.

⁷⁵ Huff, Cynthia 2020, 172.

⁷⁶ Hultin, Tore, *Dagens Nyheter*.

⁷⁷ Runnström, Astri 1973, 11–12.

⁷⁸ Idem, page 39.

⁷⁹ See, for example, Coen, Deborah R., 'The Common World: Histories of science and domestic intimacy', in: *Modern Intellectual History* 11:2 (2014) 417–438. Bergwik, Staffan, 'Father, Son, and the Entrepreneurial Spirit: Otto Pettersson, Hans Pettersson, and the Early Twentieth-Century Inheritance of Oceanography', in: Opitz, Donald L., Staffan Bergwik and Brigitte Van Tiggelen (eds.), *Domesticity in the Making of Modern Science*, Basingstoke: Palgrave Macmillan, 2016, 192–214; Widmalm, Sven 2015, 215–239.

⁸⁰ Runnström, Astri 1973, 40.

⁸¹ Idem, page 50.

⁸² Idem, page 41–47.

⁸³ Idem, page 49–50, 59.

⁸⁴ Bergwik, Staffan, *Kunskapens osynliga scener* 2016 (90).

⁸⁵ Runnström, Astri 1973, 44.

⁸⁶ Warren Weavers's Diary, interviews in Stockholm, 19 January 1938; Sven Tunberg to Walter Tisdale, 29 January 1938; Sven Hörstadius to Warren Weaver, 1 February 1938; John Runnström to Warren Weaver, 28 March 1938; Warren Weaver to John Runnström, June 7 1938; John Runnström to Harry Miller, 9 November 1941, all in: RAC, RG. 1.1. (FA 386), 800 D, Box 6.

⁸⁷ Gustafson, Tryggve, 'John Runnström in memoriam 1888–1971', in: *Experimental Cell Research* 72:1 (1972) 2–5; Hultin, Tore, *Dagens Nyheter*.

⁸⁸ Lindberg, Olof, 'John Runnström in memoriam', in: *Svenska Dagbladet* (23 January 1971).