

# Reinventing the Male: On Dynamics of Discipline Building and Medical Regulation of Sexed and Gendered Bodies<sup>1</sup>

*Torsten Wöllmann*

## Abstract

While gynaecology has been institutionalized as a medical specialty since the late eighteenth century, the male body as a sexed and gendered body was not an explicit object of modern medicine for a long time, but rather its quasi sexless and genderless norm. With the institutionalization of andrology since the middle of the twentieth century the focus on the male body has been disciplinarily anchored. In this article the institutionalization of andrology will be analyzed from the perspective of discipline building. It will be shown that the emergence of andrology is an indicator of a structural shift in the biomedical generation and regulation of sexed and gendered bodies in Western societies.

## Introduction

‘Andrology is entering a growth phase as the new millennium starts’ (Huhtaniemi 1999, 5) – these are the words of the Finnish andrologist Ilpo Huhtaniemi, at the time of the quotation president of the ‘International Society of Andrology’. Indeed, in several regional and national contexts the new medical specialty of andrology has faced processes of institutionalization in the last years. What is andrology about?

Andrology is defined as the branches of science and medicine dealing with the male reproductive organs in animals and in men and with diseases of these organs. Included in this definition are all related specialized branches of science (International Society of Andrology 2005).

Andrology is a promising case to investigate the relationship between the emergence of biomedical specialties and the generation and transfor-

mation of concepts such as body, health, illness, reproduction, sexuality and, last but not least, sex and gender. With the establishment of this biomedical field around the middle of the twentieth century and its consolidation and expansion since the 1990s, a kind of complement to gynaecology is being set up.

In this article I am presenting some thoughts on andrology that are informed by feminist gender studies, critical studies on men and masculinities, science, technology and medicine studies, and by the history and sociology of human and non-human bodies. I will focus on the recent establishment of andrology as a promising example for the study of medical specialties. The broader horizon of my paper is to study the co-constitution of the fields of life sciences and biomedicine and of sexed and gendered bodies. My leading question is: how are the dynamics of discipline building and the regulation and 'reinvention' (Haraway 1991) of sexed and gendered bodies intertwined?

The article first gives an overview of some approaches and concepts dealing with the institutionalization of disciplines. I then briefly sketch the history of regulation and production of sexed and gendered bodies by modern medicine, where, for a long time women's bodies were almost exclusively in focus. The third section of the article looks into the resistances against disciplining the medicalization of males, followed by a review of some basic developments of andrology discipline building in the last 50 years. The paper closes with some thoughts on the conditions of the possibility of the emergence of andrology and on its effects on the gender order.

## On conceptualizing discipline building

There are different approaches to analyze the organization of medical labour, the internal segmentation of medicine and the institutionalization of medical specialties (Weisz 2006). Broadly speaking, there are two dominant approaches in sociology, both emphasizing different aspects of jurisdiction, claim-staking and specialization, and both providing insights for specific issues. First, there is sociology of professionalization and professions, focusing on medical practice as professional work (Abbott 1988; Freidson 2001; Larson 1977). Second, there is sociology of science, focusing

on academic and scientific medicine. In this paper, I will concentrate on sociology of science perspectives.

Once, from the 1940s to the 1960s, the issue of the institutionalization of science and discipline building was a common topic in functionalist sociology of science, linked with names like Robert K. Merton or Joseph Ben-David (e.g. Ben-David & Collins 1966; Storer 1973). This body of work was based on several assumptions. First, it started from the assumption that we are inhabitants of a 'real world' of 'objective facts' that exist independently from interpretation and can be interpreted in a 'true' way (the truth of scientific theories consisting of correspondence with the real world). Second, no need was seen for sociological analysis of the 'content' of science, as this content was conceptualized as 'objective knowledge'. Third, the functionalist tradition followed the idea of a kind of 'contract' between science and society that guarantees the autonomy of science from social, ideological or economic contexts to produce objective knowledge. Many case studies on the emergence and institutionalization of scientific disciplines were produced on the basis of this functionalist tradition, sharing its problems and blind spots.

The critique of the functionalist approach was one of the starting points of STS. For example it influenced the sociology of scientific knowledge and the second-generation of the institutionalist sociology of science. The 1970s marked a period of growth in sociological studies of scientific specialization. A number of second-generation sociological studies followed more complex and multi-levelled approaches than functionalism (e.g. Chubin 1976; Lemaire et al. 1976; Mullins 1972). They broadened the range of causes of new scientific specialties and also acknowledged the complexity of the processes by which new specialties are created (Wray 2005, 153–154).

Interest in questions of scientific specialization seems to have passed since the 1970s: 'with the shift in research attention [for example] to the microsociology of scientific knowledge, the study of specialties (...) declined (...) amongst sociologists' (Zuckerman 1988, 535). Nevertheless, there are different approaches that can be useful in studying discipline building that leave behind the problems of classical functionalism. Instead of presupposing some harmonic contract between science and

society, authors like Pierre Bourdieu (1975), Robert Kohler and Timothy Lenoir emphasize the role of power and claim-staking in discipline building. In Kohler's words: '(...) disciplines are political institutions that demarcate areas of academic territory, allocate privileges and responsibilities of expertise, and structure claims on resources' (Kohler 1982, 1). In his effort to develop a constructivist and pragmatist approach to conceptualize and analyze processes of discipline building, historian of science Timothy Lenoir refers to a wide range of work from STS. From the micro analysis of knowledge production, Lenoir extends his notion of cultural production of scientific knowledge to the macro analysis. Thus he is trying to show how scientific disciplines and their institutions are interwoven with social, economic, and political interests:

I emphasize the manner in which science as cultural practice is imbricated in a seamless web with other forms of social, political, even aesthetic practices, and I treat the formation of discipline and scientific institutions as sites for constructing and sustaining forms of social and cultural identity situated in relation to these other cultural frames. (...) Disciplines are institutionalized formations for organizing schemes of perception, appreciation, and action, and for inculcating them as tools of cognition and communication. At the same time, as embodied practical operators, disciplines are political structures that mediate crucially between the political economy and the production of knowledge (Lenoir 1997, 3, 47).

Lenoir's theoretical assumptions such as the idea that scientifically produced knowledge is always situated, local, embodied, and partial are not new (Haraway 1988). But what is new is using them to understand the more structural and macro-level aspects of discipline formation.

### **Gynaecology and the apparatus of bodily production: Sexed and gendered bodies as effects of medical regulation**

From a gender studies perspective life sciences and biomedicine have a quite influential impact on sexual politics, reproductive health and the gender order in a lot of contexts. Donna Haraway once coined the term

‘apparatus of bodily production’ (1988, 591–596) to focus on how bodies are materialized and generated as products of assemblages that include heterogeneous materialities, humans, non-humans, discourses, institutions, practices and so on. Apparatuses of bodily production are themselves generating and regulating differences and hierarchies (e.g. male / female). These differences and hierarchies are ‘mediated’ (in a dialectical sense of *Vermittlung*) with the processes of the production and the discursive and institutional structures of medicine. From this perspective, the nature of bodies and sexes does not pre-exist history, but is essentially historical. Medical regulation plays a relevant role in generating them, as modern medicine became a powerful field in generating and regulating sexes, genders and bodies.

For a long time, male and female bodies have not been conceptualized as being essentially different in medical discourses of Western societies. Although the female body was seen as an imperfect version of the male body, and although female bodies and male bodies were put into a male dominated hierarchy, these bodies were not seen as binary. The medical constitution of modern sex and gender difference, which made a discrete distinction between the ‘biosocial’ (Rabinow 1992) groups of ‘men’ and ‘women’, has been the subject of classical historical studies (Honegger 1991; Laqueur 1990; Schiebinger 1986). These studies illustrate how the formation of the fields and discourses of modern science and medicine contributed to the generation and regulation of sex and gender differences, femininities and masculinities. Following Thomas Laqueur (1990), the fundamental shift from the ‘one-sex model’ of humoral pathology to the modern ‘two-sex model’ did not occur until the late eighteenth century – following more recent studies, this shift occurred as early as around 1600 (Churchill 2005). The ‘two-sex model’ installed an all-encompassing difference between male bodies and female bodies, making these bodies incommensurable and even oppositional. Indeed, it was a difference that became an important subject of anthropological, biological, psychological and medical research.

It is very interesting that, while the female body was conceptualized as an abnormal and pathological body, it also represented ‘nature’ (Bühmann 1998, 91). The concept of biological sex difference constituted the

division and polarity of the sexes in bourgeois-capitalist society: identifying women with reproduction and sexuality became essential to define the very nature of women, being female fecundity at the core of this dispositif. As Ornella Moscucci argues:

A deeply entrenched belief in our culture holds that sex and reproduction are more fundamental to woman's than to man's nature. Puberty, childbirth, the menopause, are deemed to affect woman's mind and body in ways which have no counterpart in man. (...) The belief that the female body is finalised for reproduction defines the study of 'natural woman' as a separate branch of medicine; it identifies women as a special group of patients and a distinct type within the human species; it defines social roles and invites their acceptance (Moscucci 1990, 2).

Whereas 'man' was generalized as 'human', 'woman' was othered. Indeed, having a look on the history of medicalization of sexed and gendered bodies, it becomes pretty obvious that medicine's othering of women's bodies was constitutive of one of the most powerful medical specialties: gynaecology. In German speaking regions, this 'science of woman' (Honegger 1991, 6; Moscucci 1990) began its triumphant course around 1820 to conquer the bodies of women. At the end of the nineteenth century the professionalization of gynaecology took place properly with the foundation of academic and professional associations, academic and professional journals and the establishment in clinical practice. The new medical specialty was constituted by focusing its attention on sexed and gendered bodies, making them the claim of knowledge production and material interventions.

Gynaecology and its infrastructure faced an intensive expansion with the rise of sex endocrinology from the 1920s to the 1940s. This discipline was quite influential in fundamentally reinventing the concept of sex. Sex endocrinology introduced a quantitative model of sex difference where every human organism has male and female characteristics: in this model both men and women have female and male sex hormones and sexed body processes are seen as being regulated by a complex feedback system of gonads and brain (Oudshoorn 1994). While fundamentally reinventing the concept of sex differences, sex endocrinology was a basis

for deepening the medical regulation and control of female sexuality and fertility. Sex endocrinology concentrated on female bodies and supplied medicine with instruments for interventions into these bodies that were previously unimaginable. With the introduction of new diagnostic methods and new drugs, medicine became capable of intervening into the menstrual cycle and menopause, making these 'natural' characteristics of age and reproduction manageable. Since the 1970s there has been a downright hormone boom: the biomedical large-scale project of 'the pill', hormone replacement therapy in menopause or fertility medication (i.e. medication to regulate ovulation and to stimulate it in contexts of assisted reproduction technology). Early diagnosis and preventive medicine became more and more influential, as the medicalization of women's life 'passages' was advancing. Thus, the asymmetric medicalization of female and male bodies has even deepened since the late twentieth century.

## Resistances against disciplining the medicalization of males

While gynaecology has been institutionalized as a specialty since the late eighteenth and early nineteenth century, the male body as a sexed and gendered body was not an explicit object of medicine for a long time. In fact, it was modern medicine's quasi sex- and genderless norm, so no medical specialty had to deal with it. As Naomi Pfeffer says: '(...) although doctors acknowledged that it takes both a woman and a man to make a baby, medical theory and practice focused almost exclusively on the female body' (Pfeffer 1993, 30).

At the end of the last millennium Dutch STS scholar Nelly Oudshoorn asked:

Have you ever heard of andrology? The very fact that andrology, the medical specialism concerned with the reproductive function of men, is still a cinderella profession compared to its bigger sister, gynaecology, is one of the striking examples of the institutional and discursive processes of othering in the biomedical sciences (Oudshoorn 1996, 153).

While gynaecology was expanding, there was no appearance of a medical specialty called 'andrology'. Physiology and pathology of the male genitalia or of the male body at large were not an issue to define the 'nature of man'.

In fact, there has even been resistance against establishing a complement to gynaecology, as some failed attempts to establish 'andrology' illustrate. In 1887 the Australian gynaecologist and professor of medicine James Jamieson concluded:

In addition, therefore, to general anthropology, or the study of human beings, as distinguished from animals (...) we might properly speak of *Andrology* and *Gynaecology* as being concerned with the study of the physical and mental peculiarities of men and women respectively (Jamieson 1887, 146).

His suggestion was left unheard. In Britain and the US there were attempts to redefine urology as andrology, but they also failed. 1891 saw the formation of a committee of urologists in the 'Congress of American Physicians and Surgeons' who called themselves 'Section of Andrology', a neologism that met with severe criticism (Niemi 1987). Neither did the suggestion of English urologist Kenneth Walker in 1923 receive due attention for several decades:

Although Gynaecology, or the study of diseases of the female genitalia, has long been recognized as a definite branch of surgery, with a separate literature of its own, Andrology, or the study of diseases of the male organs of generation, has not yet received the recognition that will one day be accorded to it (Walker 1923, V).

In German medical literature there are even findings of an early and apparently normalized usage of the term 'andrology'. In writings of gynaecologist Fritz Engelmann from 1927 there are even passages where he talks about *Andrologen* (andrologists) without any explanation, as if it was a commonly used term (Engelmann 1927, 31). All of these early usages of the term 'andrology' were forgotten for decades.

Dealing with reproductive health problems not only of women, but also of men, was nothing new for modern medicine, of course. Fertility

and erection, sexual excesses, perversions or sexual abstinence, age-related bodily changes, aphrodisiacs, onanism and injuries of body and mind caused by work or war, for example, are not new issues. Nevertheless, it is not by accident that biological men have not been medicalized by a separate specialty, but has a lot to do with the basic structures of the gender order in modern bourgeois-capitalist societies. Thus, it is pretty obvious that medical specialties are intertwined with and constitute themselves relations of power and dominance and are articulated with other cultural, social and economic processes and fields. In Ornella Moscucci's words: '(...) as the male was the standard of the species, he could not be set apart on the basis of his sex' (Moscucci 1990, 32). Neither did the enclosure and monopolization of a specific area of work and knowledge happen, nor were allies or infrastructures attracted and institutionalized that would have been necessary for such a project of discipline building. It also seems that there was not much willingness on the part of male patients for being defined as medically problematic. Given this constellation, the male body was not a promising subject matter as a claim for building a separate specialty.

## **Staking a claim: Andrology and its body of knowledge**

Early neologisms were forgotten when Harald Siebke, pioneer of sex endocrinology, activist in national socialist reproductive medicine and professor of gynaecology in West German Bonn, published an article on barren marriage, where the term 'andrology' reappeared (Siebke 1951). In the 1960s, his neologism was taken on by medical practitioners and scientists in different regional, professional and academic contexts, making Siebke the name giver of a new medical specialty.

In several countries the institutionalization of andrology as a separate field of professional and academic medicine began to take hold in the late 1960s. In its inception, spermatology, the technology of semen analysis to analyze male fertility, constituted its basis (Wöllmann 2008). Young physicians and scientists coming from different professional and disci-

plinary contexts – mainly dermatology, urology, endocrinology and gynaecology – began to label their work on men's health problems, especially on male infertility, as 'andrology', and forged new alliances. Soon, other specialists joined the branch, among them cell biologists, immunologists, toxicologists, molecular biologists, and geneticists, bringing in different epistemic and organizational resources (Nieschlag 1997). Communication on the issue of male infertility was the starting point for the first regional, national and international conferences, journals and textbooks. The foundation of societies of andrology started in the 1970s. Conflicts about 'disciplinary programs' (Lenoir 1997, 55) within medical associations were quite important for the formation of the new branch, including the foundation of new national, continental and global associations. Today, the 'International Society of Andrology' is made up of 39 national member societies with more than 10,000 members.

On the level of clinical work the institutionalization of andrology was interwoven with conflicts about responsibilities in defining, diagnosing, classifying, and treating men's health problems. In Germany, for example, andrology's 'jurisdiction' (Abbott 1988) has been contested, in particular, by dermatology, urology, internal medicine and gynaecology and the related associations. The solution was to make andrology an official subspecialty of each of them, excluding the powerful specialty of gynaecology. Over the last years andrology has also received the status of an official specialty or subspecialty in several other countries, like Egypt, Italy, France, Poland, Indonesia and the Netherlands (Wöllmann 2007).

Starting from questions of male infertility the area of andrology expanded and transformed – today it deals not only with male reproductive health, but also with erectile dysfunction and ageing males.

Further areas of andrological activities are the diagnosis and management of testicle problems and prostate disorders, for example prostate enlargement, inflammation or cancer (the latter being mostly a genuine problem of urology) prevention and rehabilitation, primary and secondary hypogonadism, delayed puberty, adverse drug side effects and environmental pollutants with regard to fertility, cryopreservation of semen and testicular tissue, forensic paternity problems, family planning, male contraception and basic andrological research (Schill et al. 2006, 1).

Today's centres of andrology's body are for example the hypothalamus, genital, testicles, hair, muscles and bones. These centres are being generated and regulated by andrology's apparatus of bodily production on the levels of cells, proteins, and genes, where risks and diseases are conceptualized. It is particularly molecular biology and genetics that have fundamentally transformed the conceptualization of the male body in andrology.

Implementing new technologies played an important role in the expansion of the discipline. One of the biggest impulses for andrology came with the normalization of in vitro fertilization since 1978, followed by intracytoplasmatic sperm injection (ICSI) since 1992. With ICSI becoming a normalized technology, even men with severe fertility disorders can become fathers, thus redefining fatherhood on the level of genetics. More than 100,000 children have already been procreated by ICSI. Another very important step was the introduction of Viagra in 1998 to deal with erectile dysfunction. Viagra and similar drugs for oral therapy of erectile dysfunction became widely used as biotechnological tools of 'male enhancement' (Loe 2006, 43). Whereas genetic fatherhood and penetrative sexuality have been successfully medicalized, the issue of male contraception is much different. Although male contraceptives have been developed since the 1970s, reproductive responsibility is still primarily assigned to women (Oudshoorn 2003).

## Conclusion: Situating andrology

The formation of the field and body of knowledge of andrology was and still is intertwined with transformations of body norms, lifestyles and sexualities, with dynamics of biopolitics, trends of aesthetically optimizing bodies, with the rise of new technoscientific and biomedical identities and health norms, with pluralization and individualization of medical products and, last but not least, with capturing of new markets by medical professions, disciplines and pharmaceutical companies (Clarke et al. 2003): 'To industry, the recognition of diversity among users indicated a variety of new markets' (Oudshoorn 1996, 163).

In this last section, the paper focuses on transformations of the gender order, situating andrology with regard to sexual politics. Asymmetric

medicalization of sexed and gendered bodies has been characteristic of modern medicine for quite a long time, this structure being articulated with other structures of power and dominance:

From the eighteenth to the mid-twentieth centuries, the great historical constructions of gender, race, and class were embedded in the organically marked bodies of woman, the colonized or enslaved, and the worker. Those inhabiting these marked bodies have been symbolically other to the fictive rational self of universal, and so unmarked, species man, a coherent subject (Haraway 1991, 210).

With the emergence of the specialty of andrology, this constellation is breaching, at least in some contexts of the field of life sciences and biomedicine. Male bodies are now marked as sexed and gendered bodies and being put on a par with female bodies. To this extent the male body is no longer the universal human body, but it is now examined and treated as a special case. In this perspective, andrology can be interpreted as a way to mark the unmarked bodies, to de-generalize and de-centre them. This 'decentering the center' (Narayan & Harding 2000) indicates some transformations of the gender order in several societies during the last decades. Manhood, masculinity, virility, maleness – they have become more questionable issues in several contexts in the second half of the twentieth century. However, it seems that the project of discipline building of andrology was not successfully communicable, neither to biomedicine and other branches of health care systems, nor to society in general in previous decades.

The complementarity of andrology and gynaecology can be seen as an effect of translating the system of binary sex difference into the division of medical labour and in the organization of life sciences and biomedicine. Human and – in the fields of veterinary andrology and gynaecology – non-human bodies are being classified as male or female, conceptualized as requiring specialized medical care and infrastructures. Thus, while the *asymmetric* medicalization of sexed and gendered bodies is being sublated, the very source of that asymmetry is being consolidated and strengthened: the medical enforcement of sex and gender difference and the binarity of male and female bodies. New stocks of biomedical knowledge and technologies help to construct and naturalize sex and gender

differences. With the rise of andrology, biomedicine discovered men's bodies, establishing a specific field of research and medical practice, 'reinventing' these bodies within a binary logic of sex difference, which plays a constitutive role in Western gender orders.

The emergence of andrology can easily be misinterpreted as a symptom of the erosion of hierarchies in sexual politics and the gender order – but symmetrization is something different to the abolishing of hierarchies. Although andrology contributes to reinventing male bodies as sexed and gendered bodies relevant to human reproduction and sexuality, hegemonic concepts of sex and gender differences and of masculinity and male bodies play a dominant role in building the jurisdiction of andrology. Andrology predominantly supplies tools and technologies to fight diseases, disorders and dysfunctions that are threatening aspects of masculinities and male bodies that are valued in many cultures and societies. The regulation and optimization of fatherhood and of phallic and penetrative sexuality, for example, and the 'reparation' and reinvention of symbols of manhood indicate that andrology is involved in giving biomedical answers to the crisis of masculinity and collaborating in the 'reparation' and 'modernization' of hegemonic masculinities.

Life sciences and biomedicine are not monolithic or homogenous social fields. Andrology, as part of these fields, also offers opportunities to overcome hegemonic structures and practices of generation and regulation of sexed and gendered bodies. The efforts of andrology to develop male contraception may be an example of this. The question of how to find ways to identify and support practices and projects within andrology that not merely reinvent male bodies by reproducing fundamental structures of hegemonic norms of sexed and gendered bodies, but that subvert and maybe even refuse them is a political issue.

## Note

- <sup>1</sup> I would like to thank Verónica Sanz Gonzalez for comments on a previous version of this paper.

100 Torsten Wöllmann

## References

- Abbott, Andrew D. (1988), *The System of Professions: An Essay on the Division of Expert Labor*, Chicago / London: University of Chicago Press.
- Ben-David, Joseph and Collins, Randall (1966), 'Social factors in the origin of a new science: The case of psychology', *American Sociological Review* 31: 451–465.
- Bourdieu, Pierre (1975), 'The specificity of the scientific field and the social conditions of the progress of reason', *Social Science Information* 14: 19–47.
- Bührmann, Andrea (1998), 'Die Normalisierung der Geschlechter in Geschlechterdispositiven', in Hannelore Bublitz (Ed.), *Das Geschlecht der Moderne – Genealogie und Archäologie der Geschlechterdifferenz*, Frankfurt am Main / New York: Campus, 71–94.
- Chubin, Daryl E. (1976), 'The conceptualization of scientific specialties', *The Sociological Quarterly* 17: 448–476.
- Churchill, Wendy D. (2005), 'The medical practice of the sexed body: Women, men, and disease in Britain, circa 1600–1740', *Social History of Medicine* 18: 3–22.
- Clarke, Adele E., Shim, Janet K., Mamo, Laura, Fosket, Jennifer Ruth, and Fishman, Jennifer R. (2003), 'Biomedicalization: Technoscientific transformations of health, illness, and U.S. biomedicine', *American Sociological Review* 68: 161–194.
- Engelmann, Fritz (1927), 'Sterilität und Sterilisierung', in Fritz Engelmann and August Mayer (Eds.), *Handbuch der Gynäkologie, Volume 3: Sterilität und Sterilisation. Bedeutung der Konstitution für die Frauenheilkunde*, 3rd ed., Munich: J. F. Bergmann, 1–278.
- Freidson, Eliot (2001), *Professionalism. The Third Logic. On the Practice of Knowledge*, Chicago: University of Chicago Press.
- Haraway, Donna J. (1988), 'Situated knowledges: The science question in feminism and the privilege of partial perspective', *Feminist Studies* 14: 575–599.
- Haraway, Donna J. (1991), *Simians, Cyborgs, and Women: The Reinvention of Nature*, New York / London: Routledge.
- Honegger, Claudia (1991), *Die Ordnung der Geschlechter. Die Wissenschaften vom Menschen und das Weib 1750–1850*, Frankfurt am Main / New York: Campus.
- Huhtaniemi, Ilpo (1999), 'Message from the International Society of Andrology: Current challenges of andrology', *Asian Journal of Andrology* 1: 3–5.
- International Society of Andrology (2005), 'Statutes', *International Society of Andrology*, [http://www.andrology.org/?Our\\_Society:Statutes](http://www.andrology.org/?Our_Society:Statutes) [1 October 2007].

- Jamieson, James (1887), 'Sex, health and disease', *Australian Medical Journal* n.s. 9: 145–158.
- Kohler, Robert E. (1982), *From Medical Chemistry to Biochemistry: The Making of a Bio-medical Discipline*, Cambridge: Cambridge University Press.
- Laqueur, Thomas (1990), *Making Sex: Body and Gender from the Greeks to Freud*, Cambridge, MA: Harvard University Press.
- Larson, Margali Sarfatti (1977), *The Rise of Professionalism. A Sociological Analysis*, Berkeley: University of California Press.
- Lemaine, Gerard, MacLeod, Roy, Mulkay, Michael, and Weingart, Peter (Eds.) (1976), *Perspectives on the Emergence of Scientific Disciplines*, Paris / Chicago: The Hague.
- Lenoir, Timothy (1997), *Instituting Science. The Cultural Production of Scientific Disciplines*, Stanford, CA: Stanford University Press.
- Loe, Meika (2006), 'The Viagra blues: Embracing or resisting the Viagra body', in Dana Rosenfeld and Christopher A. Faircloth (Eds.), *Medicalized Masculinities*, Philadelphia: Temple University Press, 21–44.
- Moscucci, Ornella (1990), *The Science of Woman. Gynaecology and Gender in England, 1800–1929*, Cambridge: Cambridge University Press.
- Mullins, Nicholas C. (1972), 'The development of a scientific specialty: The phage group and the origins of molecular biology', *Minerva* 10: 51–82.
- Narayan, Uma and Harding, Sandra (Eds.) (2000), *Decentering the Center: Philosophy for a Multicultural, Postcolonial, and Feminist World*, Bloomington / Indianapolis: Indiana University Press.
- Niemi, Mikko (1987), 'Andrology as a specialty. Its origin', *Journal of Andrology* 8: 201–202.
- Nieschlag, Eberhard (1997), 'Andrology at the end of the twentieth century: From spermatology to male reproductive health. Inaugural address at the VIth International Congress of Andrology, Salzburg, 25 May 1997', *International Journal of Andrology* 20: 129–131.
- Oudshoorn, Nelly (1994), *Beyond the Natural Body: An Archeology of Sex Hormones*, London / New York: Routledge.
- Oudshoorn, Nelly (1996), 'The decline of the one-size-fits-all paradigm, or, how reproductive scientists try to cope with postmodernity', in Nina Lykke and Rosi Braidotti (Eds.), *Between Monsters, Goddesses and Cyborgs. Feminist Confrontations with Science, Medicine and Cyberspace*, London: Zed Books, 153–172.
- Oudshoorn, Nelly (2003), *The Male Pill: A Biography of a Technology in the Making*, Durham / London: Duke University Press.

102 Torsten Wöllmann

- Pfeffer, Naomi (1993), *The Stork and the Syringe. A Political History of Reproductive Medicine*, Cambridge: Polity Press.
- Rabinow, Paul (1992), 'Artificiality and enlightenment: From sociobiology to bio-sociality', in Jonathan Crary and Sanford Kwinter (Eds.), *Incorporations*, New York: Zone Books, 234–252.
- Schiebinger, Londa (1986), 'Skeletons in the closet: The first illustrations of the female skeleton in eighteenth-century anatomy', *Representations* 14: 42–82.
- Schill, Wolf-Eberhard, Comhaire, Frank H., and Hargreave, Timothy B. (2006), 'Andrology: Definition, clinical issues and prevalence', in Wolf-Eberhard Schill, Frank H. Comhaire, and Timothy B. Hargreave (Eds.), *Andrology for the Clinician*, Berlin / Heidelberg / New York: Springer, 1–4.
- Siebke, Harald (1951), 'Gynäkologe und Androloge bei der Sterilitätsberatung', *Zentralblatt für Gynäkologie* 5a: 633–637.
- Storer, Norman W. (Ed.) (1973), *The Sociology of Science: Theoretical and Empirical Investigations*, Chicago: University of Chicago Press.
- Walker, Kenneth (1923), *Diseases of the Male Organs of Generation*, London: Oxford Medical Publications.
- Weisz, George (2006), *Divide and Conquer: A Comparative History of Medical Specialization*, Oxford: Oxford University Press.
- Wöllmann, Torsten (2007), 'Andrologie – Wie die Medizin die Männer "entdeckt"', in Martin Dinges (Ed.), *Männlichkeit und Gesundheit im historischen Wandel ca. 1800 – ca. 2000*, Stuttgart: Franz Steiner, 87–104.
- Wöllmann, Torsten (2008), 'Standardizing sperm. On the regulation of male bodies, medical expert knowledge and biotechnological classifications', in Sandra Karner, Bernhard Wieser and Günter Getzinger (Eds.), *Proceedings of the 7th Annual IAS-STS Conference on Critical Issues in Science and Technology Studies. 8 to 9 May 2008 in Graz*, Graz: IFZ.
- Wray, K. Brad (2005), 'Rethinking scientific specialization', *Social Studies of Science* 35: 151–164.
- Zuckerman, Harriet (1988), 'The sociology of science', in Neil J. Smelser (Ed.), *The Handbook of Sociology*, Newbury Park: Sage, 511–574.