MAT Medicine Anthropology Theory

FOUND IN TRANSLATION

# Who knows what a woman is…

## On the differences and the relations between the sciences

Annemarie Mol

## I still don't know. An introduction thirty years later.

'Maybe', my friend Ingrid Baart said in 1985 just after the *Tijdschrift voor Vrouwenstudies* – the Dutch *Journal of Women's Studies* – had published my first article, 'maybe this is the best piece you'll ever write'. And maybe she was right.[1]

At the time, feminism in the Netherlands was vibrant. Ingrid, for one, was part of a collective that had established a feminist health clinic in Utrecht, where we both lived. In different Dutch towns many more such activities were taking shape. There were protests and other actions, pressure groups, theory networks. The international archive for the history of feminist movements was revamped and revitalised. Departments of women's studies were established. And there was a series of Women's Studies Summer Universities and one Winter University too, that assembled all those who were interested countrywide. Book series of various kinds got published: socialist feminist, radical feminist, and 'difference theory'–feminist. There were treatises, analyses, descriptions, life histories, novels, films, children's books. And then there was '*Het Tijdschrift*' – the Journal. It tried to be open. But it mostly

[1] My work then not only owed a lot to Ingrid (who died a few years ago), but also to Peter van Lieshout, Agnes Vincenot, Pieter Pekelharing, Jaap van der Ham, Hilde de Jong, and Bernadette Maas. For their comments on the present text I would like to thank Mieke Aerts, Emily Yates-Doerr, and Rebeca Ibanez Martin. John Law corrected my English.

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welcomed contributions that did not just document the many problems women faced, but also explored how 'women' were categorised into a kind.

This formed a first element of the background against which I was able to write my article, 'Wie Weet Wat een Vrouw Is… Over de Verschillen en de Verhoudingen tussen de Wetenschappen', or, in translation, 'Who Knows What a Woman Is... On the Differences and the Relations between the Sciences'. I had reason to hope that the editors of the journal would be interested. For as I tried to open up how 'woman' is shaped in biology and medicine I was making a contribution to their project. But it was a provocative contribution. For at the time, many social scientists sought to decrease the *importance* of biology. They showed that social differences between the sexes have social causes, not biological ones. I did not disagree with that, but argued that it was urgent to also tackle the *content* of biology. For if 'we' simply pushed 'biology' and 'medicine' back a bit this was unlikely to shift the border more than, indeed, a bit. And in their own corner, much larger and better funded than 'we' were, these disciplines would go on to define what bodies are and craft technologies to intervene in them. 'We' had to open up the ways in which biology and medicine got to know and handle this particular contentious object of their research and interventions, this figure that 'we' had so many stakes in: 'woman'.

In 'Who Knows What a Woman Is...' I argued that this 'opening up' was made easier by the incoherence, the inconsistency, of the sciences. There were interdependencies but also clashes between various branches of science. They borrowed each other's terms and yet defined reality in contrasting ways. They imported each other's techniques and yet their interventions were infused with different logics. It was possible to say as much, thanks to newly emerging ways of inquiring into the sciences in philosophy, sociology, and anthropology. These, then, formed a second relevant background for my article. At this point it helped that, while an outspoken feminist since my early teens, I was not attached to a department of women's studies. Instead, one of my crucial sources of inspiration was a philosophy reading group called 'Alternatives in the sciences' (that for most of its existence consisted of five men plus me). We read philosophers arguing against the idea that knowledge mirrors nature (Rorty 1980), sociologists claiming that scientific methods do not guard the sciences against bias seeping in from elsewhere (Barnes and Shapin 1979), and ethnographies of the mundane practices crucial to crafting facts (Latour and Woolgar 1979). All of which helped me to acquire the audacity to talk about 'the sciences', all of them, on the same terms. No need to presume that 'the social sciences' had schools and streams and theoretical disputes while 'the natural sciences' were of one piece and shared a common 'paradigm' (Kuhn 1962).

Within the field of science studies some scholars focussed on methods and insisted on the fact that all knowledge is social. Others invested more in the question of *how* this worked out and *what* in the process became of the reality being known. Many feminists were in the latter camp (for example, Haraway 1979). And so were historians and anthropologists exploring medicine. Prominent on my reading list was the edited volume by Wright and Treacher, *The Problem of Medical Knowledge: Examining the Social Construction of Medicine*, that appeared in 1982. It should have been in my footnotes. But 'Who Knows What a Woman Is...' had no footnotes. And that signals its third relevant background. In the slipstream of the student movement of the 1970s, and also as a feminist project in its own right, we were seeking to reinvent what it might mean to be 'scholarly'. How to carve out an alternative style alongside method fetishism, argumentative rationalism, excessive self-assurance, and lack of doubt? How to avoid grandiose theorising without toppling over into the naïve rendering of heartfelt experiences? We were not dealing in 'knowledge' so much as in 'civic interventions'. Adding facts was fine, but shifting the grounds so that other facts might come to thrive was even better. The hope of including as many people as possible into an engaging conversation led to a serious investment in accessibility. After presenting a rough version of 'Who Knows What a Woman Is...' as a lecture I spent months rewriting it. (I could do so because I received social security money from the Dutch state. A fourth background of the article.) Tinker, polish. Polish again. In the end the text was clear, didactic, with tongue-in-cheek implicit references to ongoing discussions. The editors never asked me to specify my sources. The argument was provocative enough so why bother with anything more than that?

'Who Knows What a Woman Is...' did not just get published, it was also read. At the time we would have said that it 'functioned'. In the Netherlands it was assigned for two decades as obligatory reading in women's studies classes. But it was not equipped to travel. The Dutch language doesn't reach very far. At first this was just fine. In the early eighties we had a vibrant enough intellectual life in the Netherlands. We read English, French, and German and could publish in Dutch in a range of journals that had emerged from various sections of the student movement. They did not engage in peer reviewing; instead their editorial boards would discuss submitted articles and then suggest improvements. The short lines between the small communities involved allowed us to have good conversations indeed. So why reach across the borders?

At some point, however, it got frustrating. We had all these great discussions, but international conversations proceeded in utter ignorance of them. Then it appeared that translations didn't all by themselves do the trick. In 1991 Joke Hermsen and Alkeline van Lenning assembled twelve key feminist texts, and organised their translation into English

and their publication in the volume *Sharing the Difference*. Rosi Braidotti, by that time professor of women's studies in Utrecht and eager to make connections across the borders, wrote an inviting introduction. But to no avail. As of March 2015, Google Scholar states that the volume has been cited twenty-three times; fifteen of these citations are from later work of authors from the Netherlands. To some extent the various chapters were cited separately – but to a shockingly small extent. Take the fabulous 'Just the Same or Just Different?' In this article Mieke Aerts lays out that *in theory* the argument that women are just like men clashes with the argument that women are special, but that *in political practice* these arguments have been working together to strengthen the 'women's cause'. The English version of this article has been cited five times; four times by an author who is Dutch.

Simply existing in English is not enough for a text to travel. Some of us didn't particularly care and kept on writing well-crafted, intelligent texts in Dutch. This has continued to inspire ongoing conversations in the Netherlands, but while their work would have allowed an earlier generation to build fine academic careers, this was no longer the case. The academy sought to internationalise. Such internationalisation had a lot going for it. After all, shifting to writing in English promised a potential widening of our audience. Rather than being ignored, we would be heard. However, it was far from obvious how to achieve this. For in this strange, intractable place called 'international' it wasn't easy to discern with whom one might have a conversation. And being intelligent was fine, but in relation to which debates – those relevant to people in Boston, Manchester, or Delhi? And what, then, about Maastricht or Amsterdam? There was a lot we had to reinvent. What helped me was going to conferences and workshops and getting to know people personally so that I could write for readers with a name and a face. And it helped me as well that over the years John Law would spend considerable time editing my English. He also did this for a few others, calling it his 'imperialist language duty' – a duty that many more native speakers might consider taking on board.[2]

Like most other texts that I wrote in the eighties, 'Who Knows What a Woman Is...' never got translated. From time to time I thought about it, but I had no idea where and how to get this particular piece published. However, my later book, *The Body Multiple* (2002), builds on it.

[2] For a further analysis of some of the things that translations cannot achieve, as well as for questions to do with the relations between words and bodies, see Mol (2014).

In that book, just as in the earlier article, I argue that various branches of science do not necessarily share the same object, even if they give their object the same name. Asking different questions, mobilising different techniques, they enact different versions of their 'more than one and less than many' object (Strathern 1987). These versions may be both interdependent and in tension. However, instead of further unpacking the difficult case of 'woman', *The Body Multiple* explores the easier case of 'atherosclerosis' (vascular disease). I did extensive fieldwork for that book and read in literatures of various disciplines to sharpen my analysis, but the basic argument stayed more or less the same.

I never got to folding the argument that objects are variously enacted in practices back to 'woman'. Luckily someone else did. The book *Doubting Sex* (2012) by Geertje Mak is a striking Dutch contribution to the international conversation on 'what a woman is'. In this book Mak unravels the clinical practices used through the nineteenth century by doctors in several European countries in situations where someone's sex was in doubt. How did such doubt arise, and how was it assuaged or otherwise handled? The book has stunningly rich, sharply analysed empirical details. And footnotes. It is a scholarly *and* a gripping book. It deserves to travel.

And now 'Who Knows What a Woman Is...' will see the light of the day in English. For me this is an honour, a strange thrill, an occasion to think back in time, and also somewhat scary. The rubric in which my piece appears, is called 'Found in Translation'. But will the hope that speaks from that title even remotely come true? And if so, what will you find? Inevitably, a lot remains lost in this translation. The implicit references of that time (to psychoanalysis, to discussions about anticonception, to other local Dutch idiosyncrasies) no longer work. The novelty of the provocation has worn off. There is nothing here about the ways in which 'the brain' got sexed, for this wasn't so pressing at the time. And I could go on. But I hope that despite those inevitable failures, there is at least something that comes across.

Maybe the core message – that 'everyone' knows what a woman is, but that these diverse knowledges do not just build on each other but also clash – succeeds in traveling over the decades and from Dutch into English. But then again. Maybe something else. Some erratic idea, uttered along the way. Or the insight that present-day theories didn't start yesterday, but have a history that is layered, stuttering, surprising. Or maybe the bold liveliness of a text, which transforms social anger into intellectual pleasure. Struggle in theory, however hard, may also be fun.

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# Who knows what a woman is…

## On the differences and the relations between the sciences

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Genetics knows what a woman is. Out of a total of forty-six, a woman has two X-chromosomes.

When you scrape a cell from the buccal mucosa, meticulously prepare it, to then place it under an electron microscope, an image emerges. Ah, two X-chromosomes. A woman.

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Does this mean that a woman truly *is* a creature with two X-chromosomes? Socialization theory tells another story: a woman is someone who, when a child, was treated like a girl and in this way learned to become a woman. 'Having two X-chromosomes', is obviously not the same thing as 'learning to become a woman'. Are these different aspects displayed by a true woman simultaneously? Or are they conflicting definitions?

Maybe you assume that what a woman *really* is emerges when a series of sciences, each highlighting a small part of her, get added together. Woman predated all this knowledge and will be revealed once she has been illuminated from all sides. Every branch of science will contribute its own piece until finally the whole puzzle is laid out on the table. But maybe you have a less peaceful image of the relations between genetics, socialization theory, and all the others. Forget harmony and complementarity. Controversy! When different stories are being told, only one of them can be right. What is 'woman' really: chromosomes or education?

The question as to whether different branches of science each illuminate a particular aspect of a given object, such as woman, or instead make contradictory claims about it, is not just important for the sciences, but also for feminists who want to interfere in them. Suppose

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you find yourself confronted with the life sciences, biology, and medicine. Should you then take these seriously because they, too, 'illuminate an aspect' of woman? Or is it better to fight them because the truth about woman cannot be a biological and medical truth? Should you accept them as facts or reject them as lies? There is a third possibility as well. No, I am not going to argue for a bit of belief and a bit of denunciation; I do not propose to hold on to the 'useful' bits and discard the 'repressive' ones. Beware of happy mediums! Instead, the strategy that I lay out here starts out by bracketing the question as to what the truth about woman might be. This allows us to step outside 'science' and ask questions about the divisions of labour and territorial battles within it. What does this reveal about the relations between different branches of science?

In this text I will talk about the relations between branches of science that all concern themselves with woman. I will do so in wilful ignorance, that is without knowing or seeking to know for myself what a woman is. Instead, it is my aim to gather strategic insights for feminist interferences in the life sciences.

## Cooperation and struggle

*Anatomy* knows what a woman is: a body with a uterus, broad hips, breasts, labia, and a clitoris. As it happens, there are bodies without breasts but with a clitoris or vice versa, but anatomy shows little hesitation. *Psychoanalysis* knows that a woman is a product of identifications and complexes. Relevant as well are desires, fantasies, and resistances.

How, then, do anatomy and psychoanalysis relate? Anatomy remains silent on this question, but in psychoanalysis it is ardently contested. Several answers circulate. One of them is that psychoanalysis needs anatomy to understand who identifies with whom: a girl with her mother, because neither of them has a penis, this is easy to see. No, you hear elsewhere, what matters about the father is not his fleshy penis but the fact that he represents the law, the Name of the father is crucial. This means that anatomy is superfluous for psychoanalysis: children get caught in a symbolic order. If psychoanalysis were to need support from another science, it would be linguistics with its familiarity with symbols. Yes, some continue, anatomy is not just unnecessary for, but even at odds with psychoanalysis. After all, anatomy claims that woman has a certain bodily shape, while psychoanalysis knows that woman is the result of a complicated sexualisation history. Anatomy attributes a single sex to a singular body, while for psychoanalysis no concrete individual is ever unambiguously and totally woman.

Within psychoanalysis there is a debate about the relation between anatomy and psychoanalysis. You might also put it like this: psychoanalysis consists of three branches with different relations to anatomy. One branch collaborates with anatomy: anatomy describes bodies, psychoanalysis the sexualisation of those bodies. A second branch is indifferent towards anatomy: anatomy studies bodies, psychoanalysis is concerned with phenomena of another order. A third branch contests anatomy: anatomy is wrong in identifying woman with bodies, psychoanalysis shows that sexualisation hangs instead on lives. From the perspective of any of these branches there is only a single relation with anatomy: collaboration, indifference, or controversy. However, when you take a step back and examine psychoanalysis from a distance, you may say that psychoanalysis simultaneously cooperates with, ignores, and fights anatomy.

Dividing psychoanalysis into branches is fine, nobody will be shocked, since this is a social science and social sciences are supposed to be divided into currents and schools. Whether you consider that a sign of their immaturity or a part of their strength, the internal divisions are obvious. In the natural sciences, you might think, this is different. Natural sciences are hard, they are consistent, they would not dream of simultaneously cooperating, ignoring, and fighting. Or would they? What is the relation between, say, anatomy and endocrinology?

*Endocrinology* knows what a woman is by studying hormones. Small girls, sexually mature and postmenopausal women all have their own specific hormone levels, fluctuating with different rhythms. What does this mean for the relation between endocrinology and anatomy? Endocrinology speaks of hormones and their effects on bodily dynamics, anatomy of organs and their arrangements within bodily space. Does that make for a complementary relation or a clash?

There is a branch of endocrinology that accepts the anatomical, spatial understanding of the body and seeks to situate hormones within this space. It uses drawings of the pituitary gland and the ovaries to illustrate its own stories and points out that those are the sites where oestrogen and progesterone are being made.

Another branch of endocrinology ignores the spatiality of the body and is only interested in hormone levels. It measures hormone levels in blood and doesn't care whether this blood comes from an arm or a leg. Instead, it cares about time: has the blood been drawn in the morning or the evening, before or after ovulation? It depicts the relation between the levels of different hormones by drawing squares with arrows between them. That is how it knows what a woman is.

Yet another branch of endocrinology addresses the question of how breasts and broad hips come into being: they develop in puberty under the influence of hormones. In embryos, while they are still in utero, the labia and clitoris may be shaped by hormones as well. Look, this branch of endocrinology says, anatomy is in no position to understand what a woman is, it is far too superficial for that. It is not the body's shape that counts for most, but whatever caused that shape. Accordingly, endocrinology is better equipped than anatomy to determine who is and who is not a woman, it truly knows what a woman is. Moreover, in our corner of the world (i.e., the Netherlands) uteruses and breasts are quite often cut away, just like clitorises and labia elsewhere, without the person in question ceasing to be a woman. The sexual organs aren't crucial, the sex hormones are.

All in all, these three branches of endocrinology each have their own relation to anatomy: one collaborates with it, the next is indifferent to it and the third opposes it. Endocrinology, you might say, simultaneously cooperates with, ignores, and fights anatomy.

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Genetics, socialization theory, psychoanalysis, anatomy, and endocrinology all know what a woman is, but they know it in different ways. If you seek to comprehend these differences, the problem rises that each of these branches of science diversifies and branches out again. It is possible to call 'endocrinology' a branch of science, but there are also 'branches of endocrinology'. The overall difference between endocrinology and anatomy, which is that the former is concerned with hormones and the latter with the spatial organization of organs, cannot be called either a peaceful coexistence or a flagrant opposition without also siding with one of the branches of endocrinology. Abstaining from knowing what a woman is allows you to realize that different branches of science all claim to know this, sometimes borrowing from and building upon one another, sometimes contradicting and fighting each other, and sometimes without being impressed by or even taking notice of each other.

## Statements and interventions

Branches of science do not simply tell different stories about what a woman is. They also play – varying – roles in the world around them. Sciences do not just know reality, they also change it. How do they relate to each other in that respect?

According to anatomy, the body is a spatial form; according to endocrinology it is a hormonal system. The diaphragm is tied to the anatomical gaze; the contraceptive pill is a

product of endocrinology. In the complicated practice of birth control, diaphragms and pills closely collaborate in solving, but thereby also in maintaining, the problem of heterosexual copulations that should not result in babies. Diaphragms and pills jointly turn this into a problem of avoiding fertilization. Instead of immediately wanting to solve this problem, you might also want to step back and make space for some further analysis. Maybe the moot point is not fertilization, it is intercourse: why have sex with men in such a way that it may result in babies, why have sex, why with men? It is possible to insist that it is not a physical-technical problem, but a moral one: is contraception permissible? It may be cast as a problem of population politics: under what conditions is it feasible to give birth to, feed, and raise children? Possible framings abound: diaphragms and pills demarcate the body of the copulating woman as the site where the problem of 'birth control' is situated and can be solved. Diaphragms and pills cooperate against anything that would either forbid birth control or make it superfluous. In the meantime they quarrel amongst themselves and try hard to take each other's place. The stormy rise of the pill in the expanding contraception market of the late sixties almost ousted the diaphragm. Only in the late seventies, due to the setbacks encountered by the pill, did the diaphragm gain ground again. They blame each other for being impractical or disciplining, unreliable or unhealthy, love-disrupting or fucking-oriented. Their fight takes place in consultation rooms, bedrooms, living rooms, and meeting rooms. Among those implicated are women, unwanted children, husbands and lovers, doctors, research institutes, research sectors, sectors of industry, the media…. This isn't exactly a fight between anatomists and endocrinologists; these scientists hardly engage in it. However, it *is* a fight between anatomy and endocrinology, between one way of understanding woman-as-body and another. There is more at stake than just that understanding: it is a material, social fight and all those implicated have their own stakes. That such a material, social struggle can *also* be described as a struggle between anatomy and endocrinology is not irrelevant. It implies that these branches of science cannot function as judges in the struggle about birth control: they are parties that are involved.

When you care to explore branches of science it is possible to learn a great deal by seeking out their 'theories'. However, sciences are not just free-floating thought constructs. They do not just make statements, they also make interventions. And when it comes to intervening, sciences may once again collaborate, disregard, or fight each other, or do all these things simultaneously. They may agree about A: both anatomy and endocrinology take women to be bodies and localise birth control within those bodies. However they may clash about B: anatomy takes bodies to be spatial and intervenes in the body's spatial configurations; endocrinology takes bodies to be hormonal systems and its interventions change the levels of one hormone or another.

## Objects and techniques

If you seek to understand the relations between two branches of science, you may start out by identifying what each branch has to say about object X and then explore its interventions. Psychoanalysis, anatomy, and endocrinology may be compared by asking what each of them makes of woman. When and to what extent do they collaborate in learning to know and seeking to change woman? When and to what extent do they disregard or contradict each other? But it is not just the definition of woman in one branch of science that informs how woman is defined in another. Many other demarcations between objects participate as well: body, individual, girl, life, mother, and so on. And these objects, too, are defined by varied branches of science collaborating and fighting each other. This often goes unnoticed: if you know only anatomy, you may think that in the life sciences individuals and bodies coincide. You may then take it for granted that an individual is delineated by a skin, just like a body. In many branches of, say, psychology, this way of conceiving of individuals has been 'imported'. Psychologists who doubt it are told that it is a biological truism, a fact from biology. In return there are two lines of defence. The first is to argue that psychology and biology form knowledge systems of different orders: biology may define its objects however it wants, but psychology does not need to be impressed by this or reckon with it. The second, less common, might be described as 'doubting the import'. Instead of declaring this or that import to be irrelevant, you may question whether it is valid.

In the case at hand this is strikingly easy if only you know a little biology. In 'biology' bodies and individuals do not necessarily coincide at all. Anatomy may suggest that they do, but anatomy is not biology. A first way to undermine the fact that individual = body is to explore bodily boundaries. Where does a body actually begin and end? Do commensals, bacteria living in the bowels, belong to it? What about pacemakers, dental crowns, embryos in utero, and transplanted organs? When does food start to be part of a body and when do faeces cease to be? These are anything but simple questions.

The next step is more radical. Some branches of biology seek to know 'the body', but others don't. Haematology examines blood, irrespective of whether this is located in this body, that body, or a test-tube. Molecular biology does not know anything about bodies either, it only knows a long series of molecules. In so far as 'biology' is concerned, the 'individual' being studied may equally well be blood or molecules, or, for that matter, all the bacteria living within a particular dirty school building, or a functioning ecosystem, if need be, with asphalt roads and discarded Coca-Cola cans included. Whether or not these branches of biology contest the demarcation of individual bodies, they certainly don't take it to be self-evident.

Why then should developmental psychology, psychoanalysis, or cognitive psychology have to do so?

Sciences don't know their objects all by themselves; they build on each other's object definitions. This implies that it has far-reaching implications which definitions you import. A psychology that built on ecology would look quite unlike a psychology that rests on anatomy.

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Branches of science do not just exchange object definitions but other things as well. For instance models. The physics story about a pump is used in physiology to describe the heart. Techniques are moved about as well. Take *genetics*. Genetics knows that a woman has two X-chromosomes out of a total of forty-six. But before it is possible to make this claim a lot needs to be done. A cell is carefully selected and prepared with suitable solutions in order to make the two Xs visible under the microscope. Sometimes the microscopic image does not meet expectations. Then there may be something wrong with the solutions, the mixing, the slicing, or the microscope, but it is also possible to decide that the chromosomes are to blame. This individual is XXY, genetics may then declare. To maintain the definition of a woman as XX, this XXY is called 'abnormal'.

Genetics does not understand the techniques that it uses to know a woman. There is no genetic vocabulary to describe electron microscopes; the terms required for this come from physics and chemistry. They include the laws of electricity implied in the on/off switch, oxidation reduction-balances that help to make sense of photographic paper, theories about the behaviour of electrons in magnetic fields, and so on. In an electron microscope the truths of countless branches of science are invisibly incorporated. A geneticist does not need to know all these truths to be able to deftly manoeuvre the electron microscope, and yet her knowledge of woman as XX depends on all those incorporations. It may well be possible to take up a contrary position in genetics by questioning the theories embedded in the electron microscope. It is not easy for it demands a thorough familiarity with the subtle conflicts between the branches and sub-branches of the various sciences involved in electron microscopes. But it *is* possible, and someone able to defend an alternative theory about the behaviour of electrons in magnetic fields would at the same time seriously undermine the securities of genetics regarding woman.

## Various connections

Various branches of science know what a woman is and engage in interventions. They do not act alone, but draw on knowledge from other branches, import techniques from elsewhere, and try to achieve things together. They don't work in isolation, even though they never take *all* other knowledges about woman into account. And while at one level they foster peaceful relations, at another they engage in hopeless conflicts. The relations between branches of science are genuinely complex. Sometimes the sciences resemble political parties: internal fights over the right direction, external propaganda, and mutual opposition and coalitions. In addition, each writes a programme that stipulates how to intervene in the world and tries, as much as possible, to implement this.

Controversies between branches of science do not exist in isolation. The controversy between diaphragm and pill, that you might also call a controversy between anatomy and endocrinology, is connected to a series of related conflicts about having children and making love. It is not easy to specify the exact connections between frictions 'inside' and 'outside' of science. It is not even easy to say what the difference is between calling something a clash between 'visions' or 'branches of science', or a clash between 'social positions' and 'political standpoints'. In each of these cases some connections are foregrounded, others forgotten.

Controversies between branches of science do not stand alone. Through complicated connections they are linked up with what usually are understood to be social controversies. They are also linked to each other. A clash between two branches of biology may be connected to a clash between two branches of mathematics. The tension in biology between depicting bodily spaces and measuring blood levels has indirect relations with the tension in mathematics between drawing geometrical figures and solving algebraic equations.

That controversies between branches of science are both related to each other and to social controversies may be illustrated with the example of epidemiology. *Epidemiology* knows what woman is because it has not just tallied the frequency of diseases within populations but also their distribution over the sexes almost since its emergence as a discipline. Along the way, woman has acquired a particular meaning: it is a creature with statistically fewer heart failures but more depression than the human average. Epidemiology imports disease descriptions from various medical specialities and assembles them in classificatory lists. It does not bother to localize these diseases within the space of the body, as, for example, pathology would. In this sense, epidemiology does not collaborate with pathology. Instead, it localizes disease in another space, that of earth, and thus collaborates with geography. There are many ways in which *geography* may spatially divide the earth. Different fields of geography project

different boundaries. For epidemiology it makes a serious difference in which geographical space it does its counting; the knowledge of epidemiology changes according to the size and shape of that space. For epidemiology woman comes to mean something very different depending on whether the counting-space comprises the whole earth or stays within the national borders of the Netherlands: the woman inhabiting the earth has a considerably lower life expectancy than the woman situated within the Netherlands.

Imagine a branch of epidemiology that sets out to count within a city. It is a large city and geographers are first allowed to divide it into parts. They may do this using a ruler: some geographers divide cities into parts by drawing straight lines on city maps, which provides them with 'manageable chunks'. There are other ways as well: some geographers will travel to the city in question, walk around, and then draw twisting lines on the city map, based on the housing styles they observed and on what they heard in conversations with inhabitants. In the latter event, the street along the railroad track will belong to an area different from the street bordering the park; the old neighbourhood will be differentiated from that built in the 1950s. As a result the data that epidemiology collects differs too from one case to the other. When it collaborates with a straight-line geography, epidemiology will discover a woman deviating in various ways from the average human. When it collaborates with a geography of twisting lines, epidemiology may be inclined to generate not just a single profile of woman but several. In one neighbourhood it may be characteristic for woman to have headaches, in another woman craves her morning sherry. What a woman is, epidemiology might then say, cannot be known in general: it depends on where you do your counting.

The struggle within geography about how to subdivide cities is reflected in epidemiology. The outcomes of epidemiological research differ depending on the geographical techniques incorporated. In its turn, the struggle within geography is not free-floating either: it is related to conflicts about the allocation of houses, the causes of dilapidation, the distribution of facilities, the struggle about domestic labour and labour away from home. The struggle within geography is related to social struggles, inside the city and beyond it. Whether epidemiology likes it or not, it necessarily imports all that bickering. And when finally epidemiological knowledge is used to inform public health policies the connections become truly intractable.

## Object or characteristic?

Anatomy knows what a woman is and so does socialization theory. You cannot just add these two knowledges together because there are clashes between them. But they also have

something in common. For while anatomy and socialization theory are not particularly fond of each other, their arguments are played out within a shared framework. They share the idea that there exists such a thing as 'a woman' and that this object can be known. Anatomy investigates the object woman by outlining and cutting into bodies so as to acquire permanent knowledge; socialization theory, by contrast, states that woman is ephemeral and only materializes from particular social relations. And yet what they share is considerable. Not all branches of science assume the existence of the object woman.

Take *physiology*. Physiology is capable of measuring cardiac outputs and active lung capacities. It may subsequently declare that small cardiac outputs and small lung capacities are female. In doing so, it collaborates with statistics and it develops knowledge concerning bodies. However, physiology is unable to identify whether any particular body is or is not a woman. Physiologists may ask a person 'Are you a woman?' and thus rest on their self-perception, a fact that socialization theory might explain. Physiologists may also 'look': ah, breasts, a woman. They then note 'woman' on the research forms drawing on their anatomical knowledge. Hence, in collaboration with other branches of science physiologists are able to know if this or that person is a woman, but within the logic of cardiac physiology or lung physiology this is impossible. Physiology does not know the object woman, but the characteristic female. This is not an entity that may or may not sit on the examination table; it is a trait that different bodies display in different degrees.

Physiology is not the only branch of science that is knowledgeable about female characteristics. Psychology, for example, has many branches that do not care to speak about woman but variously study what is female instead. In this way a sex is not attributed to individuals but to characteristics. That allows for the possibility to distribute characteristics across individuals in varied ways, but also makes it possible to disconnect sex differences from bodies and spread them across the rest of the world. Accordingly, rooms, musical compositions, and research methods may be called female.

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Knowing what a woman is also means: knowing who is a woman. Using the term 'female' opens up the possibility of advocating a redistribution of this characteristic. There are more differences between these two kinds of knowledge, but again they have something in common as well. For those who are in the know, the words 'woman' and 'female' refer in the one case to an object and in the other a characteristic. They are concepts to be fixed and defined. This is not self-evident, but once again contestable. Instead of wanting to know the *object* woman or the *characteristic* female, you may also try to study the *categories* 'woman' and

'female'. This means that you do not understand these categories in relation to what they might refer to, but rather in relation to their history and their function. You may then historicize the concepts woman and female: in the eighteenth century they meant something different than in the twentieth century. You may culturalize them: in Catholicism woman and female are something other than among the Maya. You may localize them: in Stockholm woman and female are demarcated in other ways than in Madrid. In this text I have also persistently refused to know what a woman is and neither did I believe in any form of femaleness. In doing so I used a particular strategy, that of exploding, fragmenting: every unit to which you might ascribe a definition of woman or female may itself be subdivided into smaller units that each do something slightly different. There is no uniformly used category of woman or female within a century, a culture, a place, or even the institute that presents itself as the apogee of coherence: science.

## Interferences

It is fun to divide the sciences into ever-smaller branches and then discover that they are not as closed off and impenetrable as they seem to be. However, feminist interferences with the life sciences should not end there. After all, sciences are not just systems of knowledge that you may try to rob of their truth pretentions: they also work. They have effects in reality, they are intertwined with everything that is going on. This makes it relevant to take up positions within scientific controversies, not so much on the basis of firmly held beliefs in one truth or another, but rather on the basis of an informed concern with 'everything that is going on'. Based on an involvement with social and political struggles.

That is far from easy. Unfortunately, there is no clear-cut dividing line between good and evil and different levels of struggle do not necessarily align. What is more, if you care about feminist politics, the demarcation of woman and female are not your only problem, there are further relevant issues within the sciences. Feminist concerns may also lead to debates within economics about the definition of 'income' or 'household', or to medical techniques such as physical examinations that require bodies to lie naked on their backs on an examination table. Inversely, the ways in which the sciences demarcate woman or female may be related to social struggles about housing – remember the branch of epidemiology that reckons with her residence in knowing woman. Or they may be linked with struggles do to with the profits made on drugs – endocrinology would know woman differently if the production of the pill did not generate such large profits.

Not simply standing outside the sciences to analyse them, but also interfering by taking up positions within them motivated by an involvement in feminist struggles: does this imply striving to create a feminist science? Certainly not! The various branches of science differ, but only to some extent. If you prefer one branch over another in a particular situation, this is not enough reason to label it 'feminist'. If you contribute to a relatively acceptable branch of science, you might still want to avoid fostering the illusion that eradicating all sexism is possible. Unmasking and refuting all presumptions is simply impossible: the amount imported into any scientific position is always too large to grasp in full.

There is something peculiar about the ideal of a feminist science. Those who engage in feminist struggles within the larger framework of capitalist societies, do not stage 'feminist capitalism' as their ideal. Why, then, do so many of those who engage in feminist struggles within the larger framework of scientific knowledge production, strive after a feminist science? How is it that in their utopias 'science' survives as a framework?

The sciences are not just riven with controversies, they also work together. This means that feminists who seek to interfere in them have to go on collaborating as well. If may be impossible to detect everything that is imported in this or that scientific stance, but tackling particular imported definitions and models is a good intervention strategy. Dissident geographers may inspire disgruntled epidemiologists. I would not want to call these forms of collaboration 'interdisciplinary'. After all, the term 'interdisciplinary' presumes a harmony between disciplines and the possibility of adding them together. It may sound wild, but who among you ladies might warm to the idea of jointly being undisciplined?

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## About the author

Currently, Annemarie Mol is Professor of Anthropology of the Body at the Amsterdam Institute for Social Science Research of the University of Amsterdam. In the year she worked on 'Who Knows What a Woman Is…', she had a master's in medicine (free program) and in philosophy (both from the University of Utrecht in 1982) and had studied for a year in Paris (participating in postgraduate sociology and anthropology seminars in 1982/83). She was looking for a job that would allow her to do a PhD. In the meantime, facilitated by social security provisions (at the time more generous than they are now), she followed a postdoctoral course in the sociology of care, was a first-year student of political science, and taught philosophy to district nurses (for 1.5 hours a week).