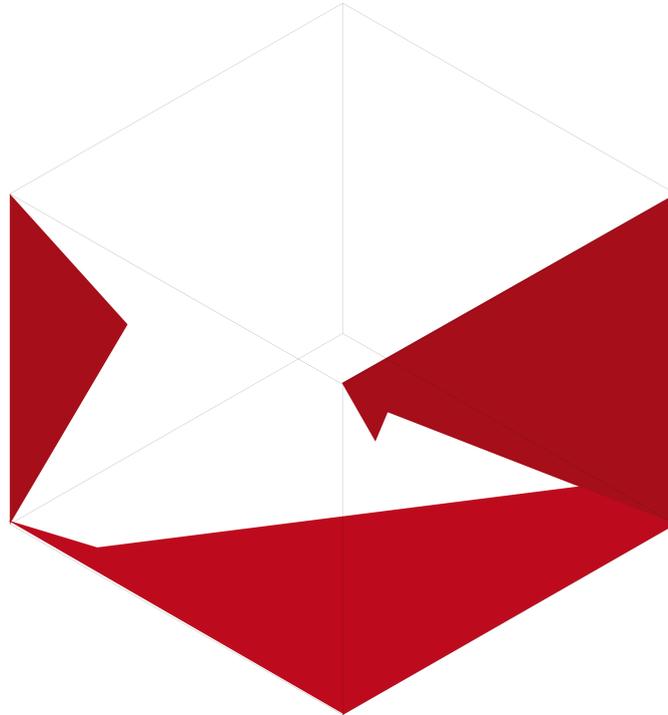


Studies in Material Thinking



Faculty of Design and
Creative Technologies
Auckland University of Technology
Auckland 1142, New Zealand

Eml info@materialthinking.org
Web www.materialthinking.org

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Mapping the Female Reproductive System: Arts-based Inquiry of Medical Students' Anatomy Drawings

Kaisu Koski

Abstract: This paper discusses hand-made drawings produced by first-year medical students to portray the female reproductive system, and the anatomical, cultural and emotional features the drawings involve. Drawing here is considered a research method in collecting and disseminating data, as well as a typical method for teaching and learning anatomy. In this arts-based study, drawing is also a method for interrogating the data in the author's art practice, asking how art and especially animation may inquire into and contribute to anatomy education (research).

Keywords: medical education, anatomy, female reproductive system, drawing, animation

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Author

Kaisu Koski /
HKU University of the
Arts Utrecht /
Research Centre Theatre
Making Processes /
livingorganism@gmail.com

Introduction

Qualitative health research is a growing field within which arts-based methods and artists are employed in many ways. In this article, these methods will be discussed in the context of my arts-based postdoctoral project in medical education and the visual culture within. During this three-year project, I used various art disciplines, including video, photography, performance, and interactive online art, during medical education research. In this article, however, I focus on drawing as a research method and an anatomy-teaching tool, and the female reproductive system as an object of visualization. This case study aims to map the images of the female reproductive system first-year medical students have before they actually begin studying, including the cultural and emotional values projected on the topic. The starting point here is that anatomies may be viewed as socially constructed, and sites for producing gender dualities (Moore and Clarke, 1995). In this regard, drawing is used not only in detecting possible biological misunderstandings about the female body and reproductive anatomy, but also in tracing cultural conventions in portraying the female interior.

The drawings discussed in this paper were collected from 62 first-year medical students at Plymouth University Peninsula Schools of Medicine and Dentistry, UK (PCMD) in 2012. The drawings were produced during a short anonymous exercise conducted as part of my visiting fellowship at the Medical Humanities Theme Group of PCMD. The students' drawings are reflected considering traditions in portraying reproductive anatomy and gendered conventions in modern biology textbook representations. I also use concepts from social semiotics in reading the images. The drawings are explored thematically and visually both in this paper and in the animation *Not to scale at all* (2014), asking how the raw data and the findings of this article may be investigated in animation art. I am thus not only talking about the drawings but also drawing (with) them. As this paper discusses the design and execution of the study, it simultaneously demonstrates a case in the current development according to which artists enter areas previously preserved for science and search for collaboration with scientists and doctors.

Drawing and
Health Research

Drawing is a commonly used method in qualitative health research. It is often used with vulnerable groups of participants such as children or young people (Bagnoli, 2009), patients (Guillemin, 2004) or women in non-dominant cultures (Huss and Cwikel, 2005). Drawing, in these contexts, is referred to as a projective research technique, which is nondirective and does not require answering certain questions (Fraser and al Sayah, 2011, p. 139). Drawing is, however, more than a technique or visual record. One of the pioneers in drawing research, Marilys Guillemin (2004, p. 273) acknowledges drawings as not only a visual product but also a process in which people come to understand illness conditions. Illness experience seems, in fact, to be the central issue in arts-based health research, and art projects often portray the human or patient side of the story. Yet, my project differs from such aims. First, medical students, although relatively young, do not represent a vulnerable group of subjects. Furthermore, the drawing exercise I conducted involved clear directions, and thus limited the level of the participants' projections. The students were not invited to improvise in terms of the theme or to specifically explore or express their feelings. Instead, the students were asked to visualize the female reproductive system and the conception process as they remember learning it, in a rather exam-like setting. Although an invitation to draw thus may, in some contexts, enhance the participants' equality with the researcher, the drawing situation itself here simulates ways of testing the students' knowledge. Drawing is, namely, used in



diagnosing students' misunderstandings in, for instance, biology education (Köse, 2008). Furthermore, while 3D animation, medical imaging and photography are currently commonly used to teach and study the human body, hand-made drawings are far from obsolete in contemporary medical education. On the contrary, hand-made drawings are frequently used in anatomy teaching (see Clavert et. al., 2012) and learning, when, for instance, students aim to memorize body structures at home. The old-fashioned black-or whiteboard and the flip board are still everyday essentials in actual learning situations.

Although arts-based research often hands over creativity to the participants (Huss and Cwikel, 2005, p. 45) or, in other words, is participatory (Frazer and al Sayah 2011, p. 141), an arts-based research project may preserve creative practices for an artist-researcher only. Therefore, it is significant to ask who is drawing in the project: the participants, the (artist)-researcher, an external artist invited to the project or a combination of these stakeholders. In this project, the participants create the initial drawings, which are later animated by, and juxtaposed with, the (visual) viewpoints of the artist-researcher. The aim is to create a visual dialogue between the participants and the artist-researcher. As the medical students' anatomical drawings create meanings on multiple levels, the drawings are explored here beyond their biological accuracy as well as written text. Furthermore, medical imagery engages the students in a particular performative and visual initiation into the medical profession. The process of memorizing, copying, and repeating anatomical shapes is appreciated here as a socio-cultural ritual: Participating in producing countless copies of the "original," and thus sharing the canonic eye-hand movements on the drawing surface, across the world and through different eras, contributes to the student's professional identity development.

Reproductive System as an Object of Visualization

Representations of the female reproductive system have always been charged with specific identities and emotions. During the Renaissance, for instance, the female body was reduced functionally to organs of regeneration, in which the uterus was seen as an enigmatic space where life begun (Park, 2006, p. 35). Furthermore, up until the 1990s the medical school textbooks in the US presented female bodies as variations of the male (Lawrence and Bendixen, 1992, p. 925). However, a shift in thinking seems to have occurred during last two decades: The students at Plymouth were told in their anatomy class that *female* is the default state from which every embryo begins its development.

The female reproductive system can be visualized in various ways. In different contexts, the reproductive system concerns more or fewer organs, which can subsequently be portrayed with visual variations. For instance, in some diagrams the brain as a hormone-regulating organ is considered part of the reproductive system. Furthermore, considering female genitals as part of the reproductive system is not obvious, but charged with cultural projections. From the feminist studies point of view, for instance, insisting that genitals are reproductive anatomy is a way of defining female gender through reproductive capacity (Moore and Clarke, 1995, p. 96).

Most anatomy atlas and online study images identified as part of this study include the following elements: two ovaries, two fallopian tubes, a uterus and a vagina. The majority of the images create a frontal, i.e. coronal, view of these body parts. When visualizing conception, in turn, the images typically depict an egg cell and a sperm cell that merge in the fallopian tube.

Reproductive system perspectives	Male (n=34)	Female (n=28)
Frontal view	34	28
Side view	3	0
External view to the vagina	6	0
Full/partial body outline	9	2



Conception location	Male (n=34)	Female (n=28)
Fallopian tube (correct)	11	7
Ovary	2	3
Uterus	8	9
Missing/unclear	13	9

Conception narrative elements	Male (n=34)	Female (n=28)
Brain/pituitary gland	2	2
Penis	2	0
Pregnant woman/growing belly	4	1
Close-up of sperm penetrating egg	11	9
Cell division sequence	2	3
Fetus/child	6	2

Table 1. Elements found in the students' drawings of the female reproductive system and the conception process.

Although the female body in these contexts is often reduced to an organ or cell, or the images otherwise create distance from a living person, the body of a medical educator can be actively involved in teaching about the female reproductive system. As I was observing during my two-month fellowship in Plymouth, teachers use their own bodies in demonstrating reproductive health, for instance, by pointing toward their lower belly for organ positions or using their arms to illustrate fallopian tubes. The photo *Fallopian tube reaches its arm as the ovary drops the egg* (Fig. 1) visualizes a teacher's physical metaphors from anatomy class.



Fig. 1. Fallopian tube reaches its arm as the ovary drops the egg. © Kaisu Koski.

The Study Background

The drawing exercise conducted in October 2012 at Plymouth was motivated by my earlier observations during this postdoctoral study. One such observation relates to interviews with drawing exercises conducted in 2011 in the Faculty of Medicine and Dentistry at the University of Alberta, Canada. A second-year medical student decided to draw a female reproductive system and the conception process. I assumed that since it was an anatomical drawing it would involve life-size organs. Yet, the scale of the drawing was strikingly large. It not only covered the entire sheet of paper (60 x 90 cm) but also exceeded the borders. Equally strikingly, the shape reminded me of a moose head. Exploring this particular drawing and



other anatomical drawings from the University of Alberta in my art practice suggested that spontaneous anatomy drawings reflect vividly aesthetic, cultural, and emotional dimensions regarding the participants' understandings of the human body. Still, the choice to continue with the actual topic of the reproductive system emerged naturally from the curriculum at Plymouth. The coursework at the PCMD is arranged according to the human life cycle. This means that the study begins at conception, proceeds to pregnancy, infancy, childhood and so forth. It thus seemed natural to invite the students to draw the *female* reproductive system because their study begins with the topic, and conception or fertilization happens in the female body.

Based on the classroom and online study materials at Plymouth, I identified three main ways of portraying the female reproductive system as a diagram, all variations relating to the direction the fallopian tubes pointed and whether the ligaments connecting the ovaries to the uterus were visualized or not. Surprisingly, during an interview with a medical educator it appeared that these visual variations in diagrams do not have any clinical relevance. Coming from an arts background, I found it fascinating that the visual features of the human body portrayal can be considered irrelevant. While certain features in scientific images thus are clinically irrelevant, some features are purposefully added or emphasized. Many scientific representations actually include specific methods for adding various visual features latent in the original specimen (Lynch, 1990, p. 181). I was curious about what kind of features the first-year medical students would add in highlighting the parts they considered important in the reproductive organs.

The students obviously arrive at medical school with certain ideas and expectations regarding reproductive health. For instance, during the plenary lecture on reproductive ethics in Plymouth, all first-year students expressed a wish to have children. Furthermore, during small group sessions the students' attitudes toward abortion appeared generally conservative. Seen from another point of view, the female reproductive system is not an emotionally uncharged topic for the medical school either. In reality, it was not self-evident that I would be permitted to conduct the exercise. I needed to negotiate the terms so that the exercise would not appear offensive to the students.

Anonymous Drawing Exercise

I conducted the drawing exercise right after a plenary lecture on assessment, which was scheduled for all first-year medical students as part of their orientation unit. There was a break between the lecture and my section: I had 20 minutes to introduce myself and conduct the exercise. Before the break, the students were told that there would be a voluntary anonymous drawing exercise about the female reproductive system. This announcement, and the break, were required by the teaching staff to preserve student integrity: They needed to be informed about the task so they could decide freely and avoid potential embarrassment if they left the room in front of their classmates. However, describing the task first and then sending the students on a break potentially influences their authentic reactions. Out of 108 first-year medical students in the PCMD, 62 (28=f, 34=m) returned to the lecture hall to do the exercise. Whether all students participated in the lecture before the exercise is unclear though, as that was not mandatory.

I decided to conduct the exercise by giving the students four minutes to draw. This did not have merely practical reasons related to limited time. It seemed to me that four minutes was short enough not to raise expectations too high regarding the artistic quality of the drawing, but long enough for a relatively detailed visualization if the participant were familiar with the topic. In such a quick exercise, one should start drawing immediately, and hence picture a spontaneous memory without too much preparation or criticism. I chose A4 size paper because the exercise was conducted in a lecture hall with a narrow long table. The A4 format also allowed a life-size reproductive system drawing, if a participant wished to draw according to scale. The paper was 80 grams recycled printing paper, to provide an adequate surface texture for drawing with pencils: the participants were given soft 8B or 9B graphite pencils to draw with. This way, the drawings express the natural pressure points in the lines associated



with hand-made drawing, as some areas are sketched more lightly and some more heavily emphasized.

The drawing exercise has two distinguishable aspects: It first invites the participant to visualize the female reproductive system and subsequently asks her or him to draw the conception process within. The task remained projected on the screen in front of the lecture hall during the whole exercise: *Visualize the female reproductive system and the conception process within*. In giving the assignment, I wished to avoid discussion about what was allowed and what was not. One of the few guidelines was that *all communication with the pencil on the paper is allowed*. Next to drawing, this included writing and the use of symbols such as arrows. After completing the exercise, students who volunteered to donate their drawings to the project signed a consent form. Although the exercise was anonymous, the students were asked to indicate on the paper whether they were male or female.

**Representing the
Reproductive System:
The Whole and Its Parts**

In viewing the drawings, I distinguish two main aspects: first, the biological accuracy such as relationships of the elements in the reproductive system and the placement of conception within. The second aspect observed is whether or how the reproductive system relates to the whole body, and from which points of view the system was portrayed. I differentiate between the female and male students' drawings regarding these qualities.

I begin by reviewing what is included within the reproductive system, and where its borders are. The diagram of the reproductive system can, in fact, be read as a map, an illustration of how the parts relate together. Kress and van Leeuwen (1996, p. 87) refer, in their social semiotic image analysis, to the whole of the map-like image as the *carrier*, while the various parts of the whole are called *possessive attributes*. What, then, is the whole in the students' drawings? Is it the reproductive system, as the assignment implies, or is it the human body within which the system functions? While one may, in general, see the human body as the whole within which all the organ systems are situated, the majority of the medical students' drawings do not picture the body as the carrier for the possessive attributes of the female reproductive system. As a matter of fact, in the majority of the drawings, the reproductive system itself appeared as the whole, without any reference to the rest of the body.

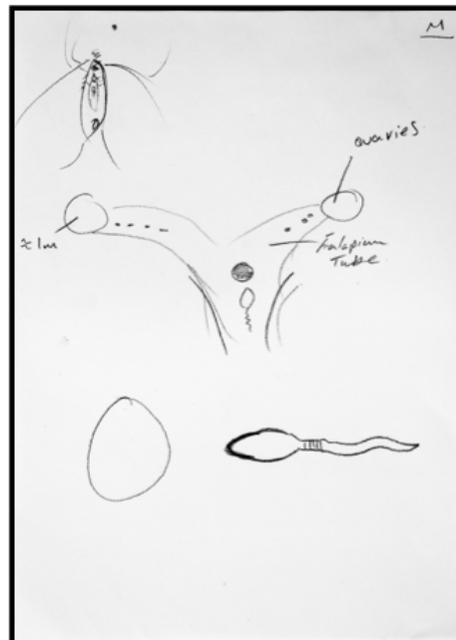


Fig. 2. Male student's drawing that includes an external view of the genitals and part of the body outline. © PCMD and Kaisu Koski.

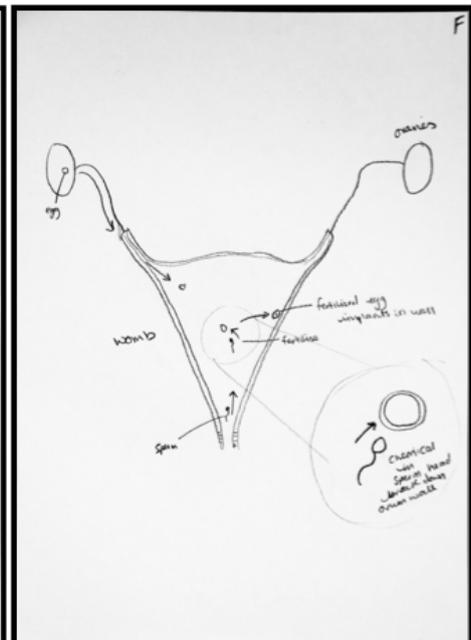


Fig. 3. Conception in this female student's drawing erroneously takes place in the uterus. The actual merging of the cells is highlighted in a close-up. © PCMD and Kaisu Koski.



What possessive attributes form the female reproductive system in the medical students' drawings? All participants drew the ovaries and the fallopian tubes. Most participants also visualized the uterus and/or the vagina, or an abstract shape merging these two. Although all students drew a coronal view of the reproductive system, few male students (m=3) also drew a cross section of the system. Almost a third of the male students (m=9) and two female students (f=2) drew an outline of the body, either the whole body or commonly as hips or upper thighs. These students thus indicated the body as the carrier. However, there are two different references to the whole body: the partial body outline as the carrier for the reproductive system, typically the hip area or thighs, and the whole body outline, often in side profile, relating to conception and pregnancy.

Only male students (m=6) visualized an external view, i.e., genitalia, as part of the female reproductive system (Fig. 2). This is likely a familiar perspective for many of them from sexual intercourse. It is thus not related to the participants' status as a medical student as such. Similar findings have been made with a completely different group of participants. When people in Brazilian shantytowns were invited to draw the female reproductive system, the majority of the men's drawings included external parts (only), in contrast with the internal parts commonly depicted by women (Victoria and Knauth, 2001, p. 22). Thus, it is not surprising that only male students (m=5) drew the clitoris as part of the female reproductive system. The clitoris has, in general, an ambivalent role in reproductive system diagrams. In school biology and science textbooks used in England and Wales in the 1990s, for instance, the clitoris was often missing (Reiss, 1998).

One of the prevailing metaphors used in textbooks and popular health books in describing female reproduction is that of a signaling process, in which chemical signals are transmitted, received and responded to (Martin, 1987, p. 24). This emphasis is not commonly present in the students' drawings though. Only a few students (f=2, m=2) indicate the brain/hormone involvement in the conception process. There may be two reasons for this. First, the students are not yet familiar with the medical school study materials, which may well describe reproduction in terms of signaling, and second, the signaling processes may be more difficult to portray in a drawing compared to a verbal narrative. The male students' drawings were generally more complex, involving more possessive attributes on the whole, more views of it, and they more often involved a reference to the body as a carrier. Still, female and male students also portrayed abstract shapes without biological accuracy. The reproductive system, uterus included, was occasionally visualized as a closed field without any connections or openings. Furthermore, the shapes of the uterus and the vagina were often unclear and blurred into one form, or were represented by vague and messy lines.

**Representing the
Conception Process:
Narrative of Cells
or People**

The drawing exercise revealed that first-year medical students' understanding of biology varies from perfect duplicates of biology book diagrams (Fig. 7) to several misunderstandings in female biology. One aspect that illustrated these errors was the way the conception process was represented. There were, in fact, two main mistaken beliefs about conception. While in real life conception takes place in the fallopian tube, in many students' drawings conception takes place either in the ovary (f=3, m=2), or in the uterus (f=9, m=8) as represented in Figure 3. Moreover, in 15 drawings the student ignored the task to draw the conception process, and it was missing altogether. On the one hand, the misunderstandings do not come as a surprise. When researching different aged students' understanding of their internal structures through drawing, Reiss and Tunnicliffe (2001, p. 11) note that despite the school biology education the students have received, most students lack much understanding of organ systems. Coming from another point of view though, I had assumed that medical students, often high achievers and the top of their class, would have revisited their prior biology or anatomy study materials before entering medical school.

There were two different approaches to creating distinct conception narratives. First, there appears the "external" story of becoming pregnant and having a baby (Fig. 4). The



process is here seen from a spatial-temporal distance, with actual human subjects involved. These stories vary in their beginning and end points. For instance, two male students ($m=2$) drew the penis penetrating the vagina as the beginning of such a conception narrative (Fig. 6). While most students began their narrative with the sperm cell/s already inside the female body, in a few drawings the male body was thus involved in the conception narrative. Five students ($f=1$, $m=4$) pictured a pregnant woman's belly growing as a final stage of the conception narrative. Intercourse and pregnancy thus illustrated conception in a timeline of several months, involving two bodies and causing external visual changes in the female. Two drawings ($m=2$) portray a new human being, as a result of nine months of pregnancy. The second angle identified on the conception narrative was the "internal" story of cell division (Fig. 5). This approach was both introduced by the male and female students' drawings ($f=3$, $m=2$).

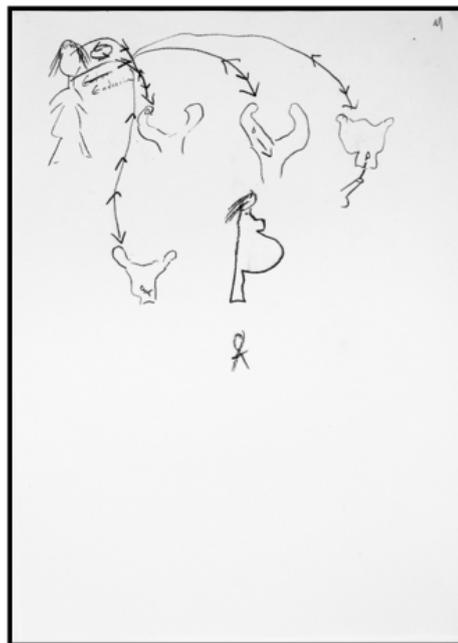


Fig. 4: Narrative that begins with an intercourse, proceeds through pregnancy and ends with a new human being. © PCMD and Kaisu Koski.



Fig. 5: Narrative of conception portrayed as an internal process of cell division and fetal growth. © PCMD and Kaisu Koski.

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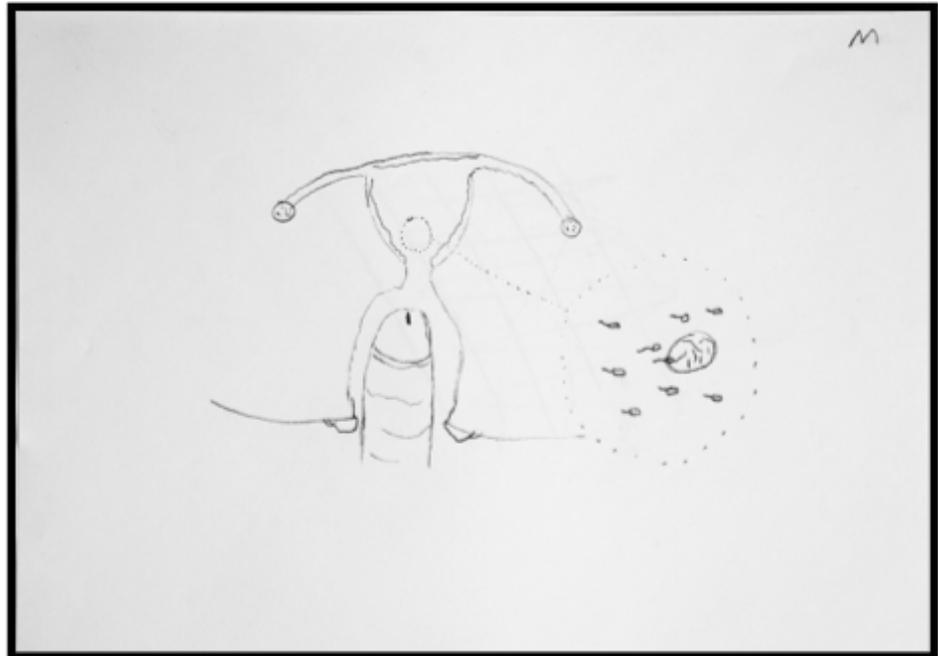


Fig. 6: The male sexual organ is here considered as a part of the conception process. © PCMD and Kaisu Koski.

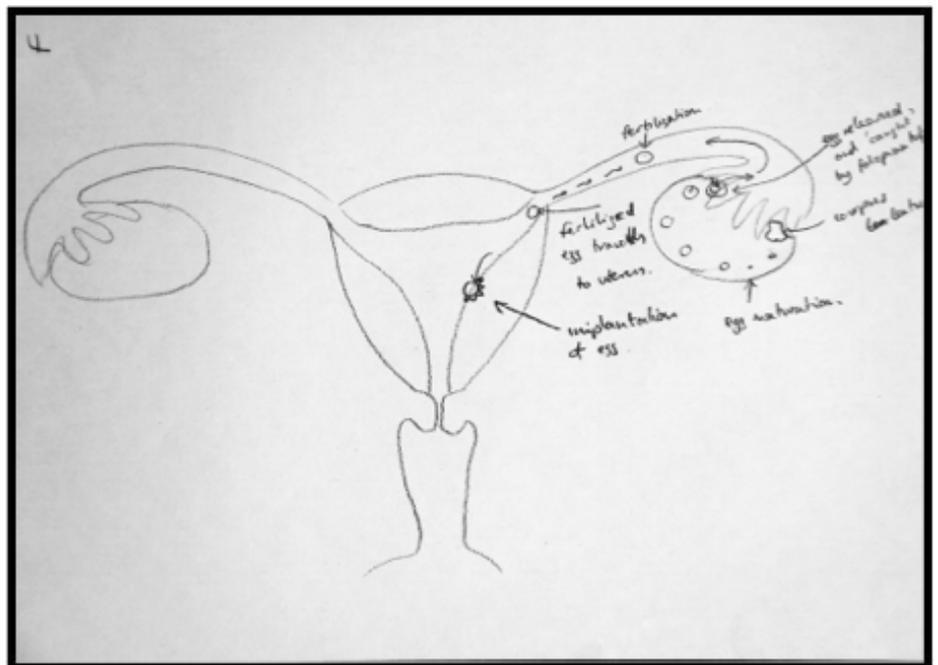


Fig. 7: This is the most detailed of all the drawings, simulating a typical anatomy textbook diagram.
© PCMD and Kaisu Koski.



Not to scale at all:
animating the drawings

Since I am an arts-based researcher and an artist, my training and interest reach beyond written analysis of the drawings. Instead of aiming to produce an analysis similar to that of a social scientist or a cultural anthropologist, for instance, I believe the added value of arts-based research lies in the multiple languages, media, and perspectives the topic is observed from and published with. In this project, the medical students' drawings are, in addition to this paper, explored through making the twelve-minute animation *Not to scale at all*. The title is derived from the data: One of the male students wrote the text "not to scale at all" next to his drawing, implying awareness of the gap between his drawing skills and how he thinks "things really are." However, the title equally points to the quasi-scientific approach of the animation, and the subjective nature of my interpretations as I have taken the drawings and literally rescaled, cropped, and manipulated them.

Although the purpose of this paper is not to conduct a detailed analysis of the animation and its creation process, I here elaborate on the main ways the animation contributes to the exploration of the data. As an overlying theme, the animation addresses the visual conventions of the female interior, and the normality and standardization of the body in medical education. According to my observations, the students have a strong need to define the parameters of normality. For example, the plastic trainers in clinical skill pelvic examinations were criticized because the bodies were not the same. Yet, as the teacher kindly reminded the students, human bodies come in all sizes and shapes.

The findings presented in this paper merge in the animation with several new readings of the images. In this regard, I see animation as a powerful tool addressing aspects of the drawings that do not easily translate in written text of still images only. One such aspect, related to the search for normality, is the arrival at the visual average of the reproductive system shapes. The animation positions the drawings on top of each other and calculates the average shape from all 62 drawings. This is, in reality, approaching qualitative data with quantitative means. Simultaneously, the calculation scene appreciates drawing anatomy as a ritual, as it compresses the repetitious drawing processes together, and transforms their outcome into a new collaborative shape (Fig. 8). Although the outcome of this calculation does not have any clinical relevance, it both refers to the authorless, or computer-generated, medical diagrams, and questions the relationship between normal and average.

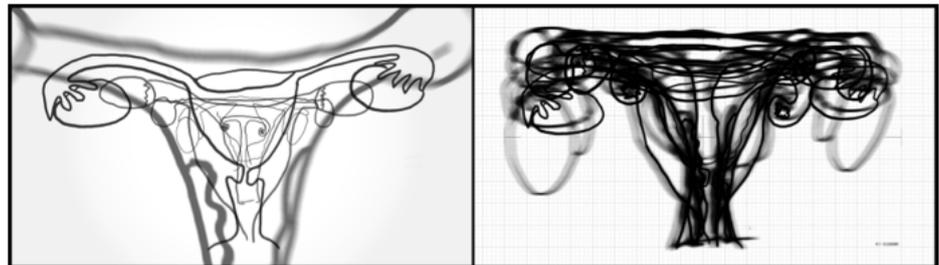


Fig. 8. The animation includes a flythrough through the students' drawings and subsequently overlaps them to calculate the average shape. © Kaisu Koski.

Another aspect better explored through moving image than written text is the creation process of the drawings, i.e., their sequential appearance and their deconstruction into separate elements. This puts the emphasis on the person behind the drawing, for instance, his or her projected confidence or hesitation, instead of observing the drawings as mere objects. The animation re-enacts the procedure of drawing in a cartoon-like style (Fig. 9), accentuated by the texts the students added next to their drawings. In actuality, all the elements drawn or written on the papers are here considered relevant: Using the decorations from the corner of the paper, which implicate doodling to kill time, or the hole in the middle of the paper, created with physical intensity, aims to bring the viewer closer to the original drawing situation and the students.



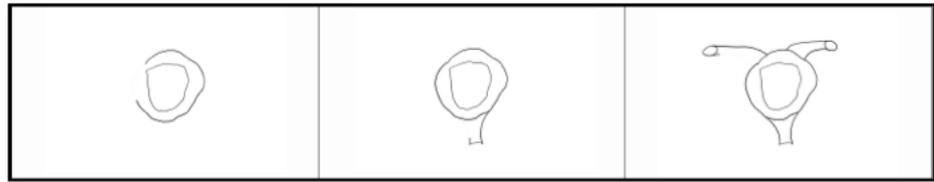


Fig. 9. In the first part of the animation, the students' drawings appear on the screen as if they were drawn in real time, while simultaneously being analysed through the voice-over dialogue with an art historian and a medical doctor. © Kaisu Koski.

As an artist working with narratives and time-based media, I consider the temporal dimension in the students' still drawings. Compared to textual analysis, animation here offers the means to add liveliness to the biological processes in the drawings by, for instance, animating the growth of a pregnant belly. It is thus visualizing some of the physical-temporal consequences of the students' drawings. In certain ways, this process adds life and vitality to "dead" drawings, in the same spirit some animations add life to images of dissected bodies (see Waldby, 2000, p. 117). Parts of the animation, for instance, superimpose the drawings on the live body, causing them to move according to a breathing belly "underneath."

Sound plays an important role in the animation. The images are "diagnosed" in the voice-over from two different perspectives. I discuss the drawings and my findings with a medical doctor, Fenna Heyning, and an art historian, Professor Rob Zwijnenberg. In these dialogues, the images gain an ambivalent status as a medical, cultural, or personal representation. Furthermore, the animation thus stages this (audiovisual) cultural-emotional analysis of the students' drawings. In actuality, next to the drawings the animation investigates the students behind them. Although the students' drawings are not intended as self-expression, they inevitably reveal aspects of their maker as well. Additionally, as a meta-level, the animation renders parts of the study process and data analysis transparent. For instance, my personal preconceptions of medical students and what the drawing assignment signifies are revealed through the voice-over dialogue. This points out some of the ethical issues involved in arts-based research, reproductive anatomy, and medical students as participants.

Although the emotional and aesthetic dimensions of art are typically recognized and appreciated in the context of health research, the technical, material, or compositional qualities, for instance, have received much less attention. However, techniques and technologies in art are not innocent. To blur the border between scientific and popular representation, the animation uses audiovisual techniques commonly used in anatomy programs on TV. Daly and Bell (2008, pp. 193–194) identify typical mobile camera *flythroughs*, which construct journeys inside the body in these anatomy programs. Often, these flythroughs are accompanied by high-pitched ethereal tones rendering the female body a timeless "landscape." While these conventions from popular anatomy series are imitated in the animation, they are simultaneously contrasted with the hand-made quality and flat surface of the drawings. The "landscape" the drawings depict is associated at first glance with vulnerability and instability rather than the sacred or the supernatural. Furthermore, as one cannot actually fly through a two-dimensional drawing, the camera is set to move through a "tunnel" of drawings arranged after another. The viewer never arrives deeper in the body though; the depth in this animation is merely metaphorical. However, the tunnel flythrough reminds the viewer of yet another medical-cultural anatomy aesthetic: As each drawing appears as a thin layer or a slide, it refers to the dissections and computerized scans associated with cross-sections of the human body. The animation thus aims to expand the context in which the drawings are seen. They are not "owned" by medicine or science, but the basic shape of the female reproductive system is here considered as part of cultural iconography, which most people from Western societies may be able to duplicate in a similar manner as the medical students.



Reflections

In addition to being important sites for producing parameters for gender and normality, anatomical drawings of the female interior have repeatedly included projections of their creators' emotions toward the topic (see Zwijnenberg, 2009). Gaining understanding of the medical students' attitudes toward reproductive health, in turn, seems relevant as they are future professionals who will make decisions about, for instance, contraception, abortion, or fertility treatments. How, then, are the students' drawings culturally or emotionally charged? At first glance, the emotion of both the male and female students' drawings, if present, is most often disguised in sterile diagrammatic imagery. Yet there were clear differences in the chosen perspectives and physical distances from which the topic was portrayed. Several male students pictured the reproductive system as if they were looking at it from between the woman's legs, thus portraying the external view to the genitalia. Occasionally this was accompanied with a penis in the picture. Furthermore, the male students typically formed a conception narrative, which considers the external visible consequences of conception, such as a growing belly and an actual baby. As men always hold an external view of the female reproductive system, it would be tempting to say that many of the male students' drawings are influenced by their sexual experiences and "view" of a woman's body, as well as a sense of importance of the male role in the conception. The female students, in turn, chose to draw the conception commonly as an internal, cellular process, and pictured the interior parts without an external view or a reference to the body. Does this imply that the female students considered creating a self-portrait of some kind, or, in fact, that they wished to avoid too personal portrayals with a reference to the body as a person? Are the female students perhaps "looking inward" in trying to translate the reproductive system in drawing? Although this may seem unlikely, male and female students defined the whole and its parts slightly differently. In this instance, the male outsider's role seems to support a less fragmented view of the body.

The drawings in this study are snapshots in the initiation process into a visual culture of medical professionals. The students' drawings, or their views of the body, are thus not stable entities. They have probably changed already by today. However, the snapshots are not fleeting or meaningless; certain patterns may repeat from generation to generation. Next to registering their biological signification, this study augments the snapshots into personal, professional, and imaginary dimensions, by connecting with the visual conventions in "producing" female anatomy and celebrating the drawings as a ritual in the medical students' identity-building process in a form of an animation.

Regarding the arts-based (health) research, working with participants and so-called sensitive topics asks awareness about the chosen methods and the artist-researcher's positioning. While my drawing assignment, essentially, may sound neutral, it is not innocent or value free. The word "reproduction," for instance, while commonly used in medical education, can be questioned in the context of an organism that neither makes copies of itself nor can reproduce by itself (Keller 1992, p. 132). This points to the directive role of a researcher, including the influence of the chosen terms, and its subsequent coloring of the data: as my assignment employs the biology book and medical school terminology, it would be odd to expect highly personal let alone romantic interpretations of the topic.

Although medicine, anatomy included, always involves a felt tension between biology and the personal dimension, a similar kind of tension can be found in arts-based health research projects. Such projects often involve not only sensitive topics or groups of participants but also the personal presence and transparency of the artist-researcher. Even though the medical students may not represent a vulnerable group of participants as such, a closer look at the drawings through the animation suggests sensitivities related to the topic. Exposing my own naivety or preconceived ideas about the medical students thus seems relevant here: not only does it inform the animation viewer of the thinking processes behind the scenes, providing moments of recognition or surprise, but it also enhances the equality between the artist-researcher and the participants. In fact, asking in this project only the students to be vulnerable without revealing my own vulnerability would seem misbalanced, not to scale at all.



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Kaisu Koski /

HKU University of the
Arts Utrecht /
Research Centre Theatre
Making Processes /
livingorganism@gmail.com

Kaisu Koski is a Finnish artist and researcher, based in the Netherlands. She graduated from the Faculty of Art and Design in the University of Lapland and the Amsterdam School of the Arts, receiving training in media and performance arts. In 2007 Kaisu earned her doctoral degree by defending her dissertation on interactive performances in the University of Lapland. Her art practice is intertwined with academic research, focusing on the dialogue between art and medicine, and the methodology of arts-based research. Her recent postdoctoral research project (2011-2013), funded by the Academy of Finland, explores the various representations of the body in medical education. Kaisu is currently affiliated as a researcher in the HKU University of the Arts Utrecht, Research Centre Theatre Making Processes.

