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Instructed perception in prenatal ultrasound examinations

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Abstract
The purpose of this study is to elucidate various practices for the structuring of images on an ultrasound monitor during prenatal ultrasound examinations. This study focuses on the practices that healthcare providers employ to invite pregnant women to differentiate a gray-tone image on the ultrasound monitor from the image's background. In sequential environments in which pregnant women display difficulty in differentiating an image on the screen in response to the healthcare provider's invitation, the healthcare provider employs practices that require additional bodily involvement to structure the images on the screen. Furthermore, on certain occasions, the healthcare provider also points to a particular abdominal location with the ultrasound transducer, which is held against the abdomen to produce the very image being differentiated. This study demonstrates that the image on the ultrasound monitor is intrinsically embodied and spatially (between the screen and the participants' bodies) and modally (among vocal/auditory, visual, and tactile modes of orientation) distributed. In addition, the study suggests an interaction-organizational ground for an aspect of the 'personification of the fetus' through obstetric ultrasound.

Keywords
Conversation analysis, obstetric ultrasound, restructuring of the body, structuring of images

Introduction

Today, many (almost all in the Japanese context) pregnant women undergo ultrasound examinations during pregnancy. However, obstetric ultrasound has been controversial. One of the issues has concerned the 'personification of the fetus'. Certain researchers have been concerned that obstetric ultrasound may construct the fetus as a separate agent

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and thereby as a 'person'. The construction of the fetus as a separate agent is enhanced by the loss of the women's role as 'gatekeepers' regarding knowledge of the fetus; as certain studies have suggested, obstetric ultrasound 'bypasses women's multifaceted embodiment and consciousness, providing knowledge of the fetus independent of her own framework' (Rapp, 1999: 121). However, pro-life advocates praise the technique for bringing pregnant women emotionally closer to their 'unborn babies' through real-time visual images (see Taylor, 2008, for an overview). Thus, the personification of the fetus has received opposing evaluations.

This study examines how the perceiving of fetal images on an ultrasound monitor is achieved in and through the interaction between a healthcare provider and a pregnant woman. Since the 1990s, much ethnography-based research has demonstrated that the meanings of women's experiences of reproductive technology, including ultrasound images of fetuses, are negotiated during various phases of healthcare service encounters in particular social and cultural contexts (Cussins, 1996; Franklin, 1997, 1998; Franklin and Roberts, 2006; Mitchell, 2001; Mitchell and Georges, 1997; Rapp, 1997, 1999; Regone, 1994; Rothman, 1993; Taylor, 1998, 2008; Thompson, 2005). In this study, through the detailed analysis of video-recordings of actual ultrasound examinations, I show that the meaning of fetal images is a thoroughly embodied and interactional accomplishment. In doing so, I indicate how an aspect of the personification of the fetus is procedurally grounded.

The embodied nature of visual perception has been explored through the analysis of actual interactions (Alač, 2008; Goodwin, 1994, 1995, 1996, 1997, 2000a, 2003; Nishizaka, 2000, 2006; Rystedt et al., 2011). In particular, Goodwin (2003) clearly demonstrates that the meanings of talk, gestures and features in the environment are mutually elaborated through their juxtaposition with each other. Drawing on this idea, Nishizaka (2003) shows how imaginary structures are jointly created through deploying various hand gestures at the monitor screen in conjunction with talk and the images on the screen (see also Murphy, 2005).

In obstetric ultrasound examinations, healthcare providers deploy various embodied practices for structuring images on the ultrasound monitor screen, in conjunction with talk and with the environment, which includes various artifacts and multiple bodies. Through the juxtaposition of the healthcare providers' practices for structuring images with the relevant portions of the environment, the pregnant women's bodies, as well as the healthcare providers' bodies, are restructured. This study elucidates various structuring practices and their procedural consequences for the further development of interaction.

Differentiation sequences in ultrasound examinations

Ultrasound scanners measure the difference in time between the sending and the receiving of ultrasound waveforms from a transducer (i.e. a tool that the healthcare provider holds and moves against the pregnant woman's abdomen), and they transform this information into gray-tone images of the pregnant woman's interior structures that are displayed on a monitor (see e.g. Cunningham et al., 2001: 390). As I demonstrated elsewhere (Nishizaka, 2011), ultrasound examinations are built on sequences of a particular type

('differentiation-sequences'), which consist of two action types: the healthcare provider's inviting of the pregnant woman to differentiate the image of a particular fetal part on the screen, and the pregnant woman's claim to have differentiated the image. The following set of extracts comprises several simple instances of the sequence type (see Sacks et al., 1974; Schegloff, 1968, 2007; Schegloff and Sacks, 1973, for the notion of sequence type).

In all of the fragments, the healthcare providers indicate an image of a fetal body part. In lines 1–2 of Extract 1, the doctor describes what he is doing: after measuring fetal girth, the doctor moves the transducer from one location to another on the pregnant woman's abdomen.

(1) [TE I: 02: 01][1]

1 DOC: *onaka no mawari o s(k)okutee: .hh sate:*
stomach P around P measure now

2 *.h ko'k kara koo kite:*
here from like_this come

"((I am)) measuring how large around the ((fetal)) stomach is.
.hh Now, ((I)) come from here, and"

3 *(0.8) ((The doctor brings his right hand to the screen.))*

((The hand reaches the screen
and indicates a location.))

4 DOC: → *.h bookoo.*
".h Bladder."

5 *(0.4) ((The doctor retracts his hand from the screen.))*

6 PWM: → *hai*
"Yes."

The doctor, holding the transducer in his left hand, raises his right hand toward the monitor during the 0.8-second silence in line 3. The hand reaches the monitor screen at the '*ko*' of '*bookoo*' ('*bladder*') in line 4 and points to a particular location on the screen. With this complex action, consisting of a pointing gesture to the screen and the mentioning of a body part, the doctor appears to invite the pregnant woman to differentiate the image of the fetal bladder from the background. When the doctor retracts his right hand from the screen during the 0.4-second silence in line 5, that is, when the complex action can be perceived to be completed, the pregnant woman claims the invited differentiation in line 6 ('*hai*' ['*Yes.*']).[2]

In line 1 of Extract 2, the midwife announces what she will do: an examination of the fetal internal organs. The midwife invites the pregnant woman to differentiate an image on the screen in line 3.

(2) [JH II: 3: 04]

1	MDW:		*°jaa*	*kondo°*	*onaka*	*o*	*miyoo*	*ka ↑ne: .hhh*
			then	this_time	stomach	P	examine	P P
			"Then, next, ((I)) will examine the internal organs. .hhh"					
2			*(6.2)*					
			((MDW brings her left hand to the screen.))		*((The hand reaches the screen.))*			
3	MDW:	→	*kore*	*bookoo*	*ne*:			
			this	bladder	P			
			"This is the bladder."					
4	PWM:	→	*N<*					
			"YEAH!"					
5	MDW:		*akachan*	*no*	*shikko*	*ga*	*tamattoru.*	
			baby	P	pee	P	gather	
			"The baby's pee has gathered ((here))."					

In line 3, the midwife, holding the transducer in her right hand, raises her left hand toward the monitor screen, at which point she utters '*kore*' ('*this*') and then mentions a fetal body part ('*bookoo*' ['*bladder*']). Her left hand reaches the screen at the beginning of '*ne*:' in line 3. Then, in line 4, the pregnant woman claims the invited differentiation of the body part's image on the screen with an emphasized *n* (*yeah*). The midwife retracts her left hand from the screen at the same time that this claim is made.

The pointing gesture is not synchronized with the locational demonstrative term *kore* (*this*). Rather, the hand movement begins when the demonstrative term is uttered, and the pointing itself occurs immediately after the mention of the word *bladder*. This sequential pattern is observed recurrently in the cases in which the format (demonstrative term *plus* pointing gesture *plus* the name of a body part) is employed (see Hindmarsh and Heath, 2000: 1863, for the same observation). One can assume that locational demonstrative terms, combined with incipient hand movements, serve to display orientation toward a particular, yet-to-be-known location on the screen. Here, the core of the differentiation invitation is the complex of the pointing gesture and the mentioning of the name.

In Extract 3, the midwife employs a different practice. In the clinic, midwives use a cursor that appears on the screen to point to a particular location. At the time of the extracted exchange, the midwife has been maintaining the cursor at the location where the fetal buttocks are visible. This location now serves as a starting point for the differentiation of the next item, that is, a fetal leg.

(3) [IK I: 04: 37–39]

							((MDW slides the cursor toward the upper right.))		
1	MDW:	→	*.hh*	*de*	*ashi*	*ga*	*koo-:*	*gutte*	*nobite*	*mas'*
				and	leg	P	this_way	MIM	extends	PL

2 → *yo n ┌e::┐ ┌de o┐ shiri des' ne:::*
P P and buttocks JD_PL P

".hh And a leg extends, this way, like *gu*. And ((here are)) the buttocks."

3 PWM: → *└aa┘ └ha:i ┘*
"Oh. Yes."

In line 1, the midwife employs the mimetic expression *gu* to describe the appearance of the mentioned body part, that is, a leg, and while uttering this expression, she slides the cursor on the screen toward the upper right. This movement of the cursor can be perceived to represent the contour of the target image. The complex action, which includes the description of the body part's appearance and the movement of the cursor, constitutes a differentiation invitation. In line 3, the pregnant woman claims the invited differentiation.

Thus, as a sequence type, the differentiation sequence consists of two action types, that is, differentiation invitation and differentiation claim. In the following, I focus on various instances of the first position action-type and explicate practices that healthcare providers employ to construct them. I argue that these practices are occasioned by the possible difficulty in differentiating fetal images on the screen and that the practices may enhance the similarity between the projected fetal body and an actual human body.

Data and method

Video recordings of 32 prenatal ultrasound examinations were collected in several urban areas of Japan from 2002 through 2008. From these video recordings, I extracted 38 fragments in which healthcare providers invited pregnant women to differentiate an image on the screen and analyzed the fragments employing conversation analysis (see Heritage, 1984a; Sacks, 1992; Sacks et al., 1974; Schegloff, 2007) to investigate the procedures that the participants employed to produce the orderliness of their activities. The investigation of these procedures was based on detailed analysis of each case. All of the cases that I examine were abdominal, rather than vaginal, examinations of women in the late stages of pregnancy, unaccompanied by their partners, except in Extract 3.

The conversation analytic literature on interaction in healthcare settings has accumulated substantially (see e.g. Heritage and Maynard, 2006), but the examination phase has been relatively infrequently examined. Heritage and Stivers's (1999: 1501) study on 'online commentary' addresses the type of physician communication that 'describes or evaluates what the physician is seeing, feeling or hearing during the physical examination of the patient'. The demonstration in prenatal ultrasound examinations is one type of 'online commentary' thus defined, although it requires that the pregnant women also perceive the gray-tone images in question for themselves. Most relevant to this study are Heath's (1986, 1988, 1989, 2006) studies on 'body work' during physical examinations. He argues that by withholding response to the ongoing examination and visually orienting away from the physician and his or her activity, patients 'transform themselves, or part of themselves, from an active experiential

subject into an object of inspection, manipulation, and examination' (2006: 208). During obstetric ultrasound examinations, pregnant women's bodies are not only transformed into objects of examination and demonstration, but they are also restructured relative to the internal structures beneath their abdomens to meet 'the ongoing requirements of the diagnostic activity' (p. 209).

In what follows, I first elucidate an ordered set of embodied practices for structuring images on the monitor screen. The abdominal location of the fetal part, the image of which currently appears on the screen, is also perceived through the operation of the transducer on the abdomen. That is, the structuring of images on the screen implicates the restructuring of the pregnant woman's body relative to her internal structures, the images of which appear on the screen. Following this, I will show how the participants integrate the structuring of the images on the screen and the restructuring of the pregnant women's bodies through the employment of talk and various embodied practices, and I argue that the structuring of images on the screen is rather embedded in the restructuring of the pregnant women's bodies. I will also show how the successful differentiation of an abdominal location of a uterine structure, the image of which image appears on the screen, may provide the participants with opportunities to restructure the pregnant woman's body further. As indicated earlier, I will focus mainly on the healthcare providers' practices.

Healthcare providers' various practices for structuring images

In Extracts 1–3, hand (or cursor) movement and the mentioning of a body part were employed by the healthcare providers as practices to structure the gray-tone images. Through these practices, the healthcare providers can be said to have instructed the pregnant woman in how to differentiate the image of the target body part as a figure from the background (see Goodwin, 1994, 1996; Lynch, 1985, 1988).

The practices employed in Extracts 1–3 were simple in their forms, and the differentiation invitation in each extract initiated a two-utterance (i.e. the shortest possible) complete sequence. However, one can observe more elaborate practices for structuring the images on the screen. These more elaborate practices are employed under special circumstances, as I describe in a presentation of several cases.

Repetition

In the following extract, the midwife states that the four 'chambers' of the fetal heart (i.e. the ventricles and atria) are visible on the screen.

(4) [JH II: 3: 04: 22–25]

1	MDW:	*<chotto:*	*kurakute>*	*mi*	*nikui*	*kamo shire nai*	*kedo:*	
		a_little	being_dark	see	hard	perhaps	though	
		"Though it may be hard to see,"						

((MDW points to ((MDW points to two locations.)) two locations.))

2 → *shinzoo no <oheya> ga (.) .hhhh (.) koo (.) i-yottsu NE*
heart P chamber P this_way four P
"the chambers of the heart are, (.) .hhhh (.) this way, (.) four,"

((MDW points to a different location when uttering each demonstrative.))

3 → *koko ko↓ko °ko-° koko 'tte yuu kan ji de ima miete =*
here here (here) here like now visible
"visible here, here, here, here." [Including l. 5]

4 PWM: *↑f u u : : : : : : : n*
"Is that so."

5 MDW: *= <masu ne::>*
JD_PL P

6 *(3.8)*

There are two layers of repetition in this extract. The midwife's left hand reaches the monitor screen at the second '*o*' of '*shinzoo*' ('*heart*') in line 2. The midwife makes the first four pointing gestures when she utters '*koo (.) i-yottsu*' ('*this way (.) four*') in line 2, and then she makes the second four pointing gestures while uttering four locational demonstrative terms *koko* (*here*) in line 3. This layer is the first layer of the repetition: a set of four pointing gestures is repeated. In addition, each of the second four pointing gestures is accompanied by a demonstrative term. That is, the same unit (a locational demonstrative *plus* a pointing gesture) is employed four times consecutively. This layer is the second layer of the repetition.

How elaborate this practice is can be observed if the preceding extract is contrasted with the following one.

(5) [SZ 3: 02: 11–12]

((DOC points to four different locations.))

1 DOC: *yyottsu no heya ni ne? wa kare te masu ne::?*
four P chamber P P divided JD_PL P
"((The heart)) is divided into four chambers, right?"

2 PWM: *ha::i*
"Ye::s."

The doctor in Extract 5 makes four pointing gestures while mentioning the target body part, that is, 'four chambers', in line 1. Here, the doctor's mentioning of the body part and the four pointing gestures constitute one unit of practice.

One can note that the elaborate practice in Extract 4 may be related to the midwife's expressing possible difficulty in perceiving the target image in line 1. It is highly probable that this possible difficulty motivates the midwife to employ an enhanced practice (i.e. repetition) to indicate the image of the body parts ('chambers'). Note also that in this context the pregnant woman may not be expected to differentiate the target image. In fact, she responds only by acknowledging the information conveyed by the midwife's preceding utterances ('↑*fuu:::::::n*' ['*Is that so.*'] in line 4), rather than claiming to have differentiated the image.[3]

Multi-layered differentiation invitation

In the following extract (Extract 6), the midwife mentions a possible difficulty in perceiving in line 1. To indicate the fetal genitals, she first identifies the image of legs to provide orientation for locating the image of the groin in line 3. (Note that one can infer from the extracted and subsequent exchanges that the pregnant women in Extracts 6 and 7 know the fetal sex at the beginning of the extracted exchanges. In fact, as early as the early 2000s in Japanese hospitals and clinics, the fetal sex was only revealed at the pregnant woman's request).

(6) [JH III: 13: 32–40]

1 MDW: <*soo ne*: ┌*:::*> ┌<*mi nikui 'cchaa mi nikui->* =
well see hard if_you_say_so see hard
"<We::ll> <it is kind of hard to see->"

2 PWM: └ *n*:::└*:n*
"Mh::::m."

((MDW's left hand reaches the screen.)) *((MDW rotates her left index finger over a location on the screen))*

3 MDW: = *.h choodo koko ryoo ashi daka↓ra*
just here both leg so

((MDW rotates her left index finger over another location.))

4 ┌*koko omata ni naru n'*┐ *desu yo ne:::*
here crotch P should_be JD_PL P P
".h Just here are both legs, so here should be the crotch."

5 PWM: └ *n n n n n n:::n* ┘
"Yeah, yeah, yeah, yeah."

6 PWM: *soo da ↓yo ne:_ ┌kage wa: mie te'ru* =
so JD P P shadow P visible
"((It)) should be so. Only the shadow is visible, though."
[Including line 8]

7 MDW: └ *n : : : n*
“We:::ll,”

8 PWM: =┌ *k e d o :* ┐
though

9 MDW: └*>soo soo soo soo soo*┘ *soo<*
“>Right, right, right, right, right, right<”

The midwife’s left hand reaches the screen when she utters the ‘*ko*’ of ‘*koko*’ (‘*here*’) in line 3. She rotates her left index finger over the orientation image when she mentions the body parts, that is, both legs. Then, she moves her finger to another location on the screen and rotates the finger over that location again, when she utters ‘*koko*’ (‘*here*’) in line 4. Following this locational demonstrative term, the midwife mentions the euphemistic name of the target body part, that is, ‘crotch’. In response to this utterance by the midwife, the pregnant woman remarks with the contrastive marker *wa* (which is translated as ‘only’ in the transcript) that she can perceive no more than the shadow of the target (i.e. the genitals) in lines 6 and 8. The word *kedo* (*though*) at the end of the utterance (line 8) indicates her difficulty in gaining full vision of the target. The midwife agrees emphatically in line 9.

In Extract 6, the midwife repeats the same practice (a locational demonstrative *plus* a rotating gesture *plus* the mention of the name of a body part) consecutively to indicate the orientation and target images. The multi-layered differentiation invitation can be termed a variant of repetition.

Isomorphism

In the following extract (Extract 7), the doctor attempts to indicate that the genitals are visible on the screen. He appears to invite the pregnant woman to differentiate the image of the genitals from the background in lines 1–4, although the invitation is constructed in a highly delicate manner, presumably because of the target organs. The target body parts (the genitals) are not mentioned explicitly, and the invitation is presented as a report of what is visible, in contrast to the straightforward instruction to perceive described in Section 1. Despite this delicate construction, the doctor’s utterance in lines 1–4 is hearable as a differentiation invitation. However, in lines 5–7, the pregnant woman only acknowledges the reported fact by repeating the report’s core part (‘*mie te*’ [‘*visible*’]) and by finalizing her response with the acknowledgment token *n* (*mh mm*), rather than claiming the invited differentiation.[4] This conduct by the pregnant woman makes apparent her possible difficulty in accomplishing the invited differentiation. Then, in line 9, the doctor proceeds to reattempt the (failed) differentiation.

(7) [TE I: 2: 02]

1 DOC: *.hh (s)orede .h ↓ha:::i. tte kono (.) .h omata*
then yes P this crotch

2 *no aida de:*
P between P
".hh And .h here. This, (.) .h at the crotch,"

3 *(0.8)*

4 DOC: *hai mie te masu to ┌:.*
OK visible JD_PL P
"OK, visible."

5 PWM: *└mie te ↓ru*
"Visible"

6 *(.)*

7 PWM: *n*
"mh mm"

8 *(0.4)*

((DOC thrusts two fingers downward in front of the screen. See Figure 1))

9 DOC: → *(k)oko ne? .hh ashi ga (.) koo aru wake desho?*
here P leg P like_this exist reason right?
"Here, you see. The legs (.) are there like this, OK?"

10 *(.)*

11 PWM: *hai.*
"Yes."

12 *(.)*

13 DOC: *ashiga i- .h ko- .h dakara ko- oshiri de: ashi ga*
leg (one) (this) therefore (this) buttocks P leg P

14 *ni hon de te te: .hh sono omata no aida*
two stick-out and that crotch P between

15 *o mite iku to (.) hore*
P look go when see?
"A leg- .h this- .h well this- the buttocks, and the two legs are visible, and .hh if ((one)) looks at the crotch, (.) you see?"

In the reattempt at differentiation, the doctor also constructs the entire differentiation invitation as two-layered. First, he invites the pregnant woman to differentiate the image of the fetal legs in the form of a request for confirmation in line 9. After receiving a claim of the image's differentiation from the pregnant woman in line 11, the doctor uses the

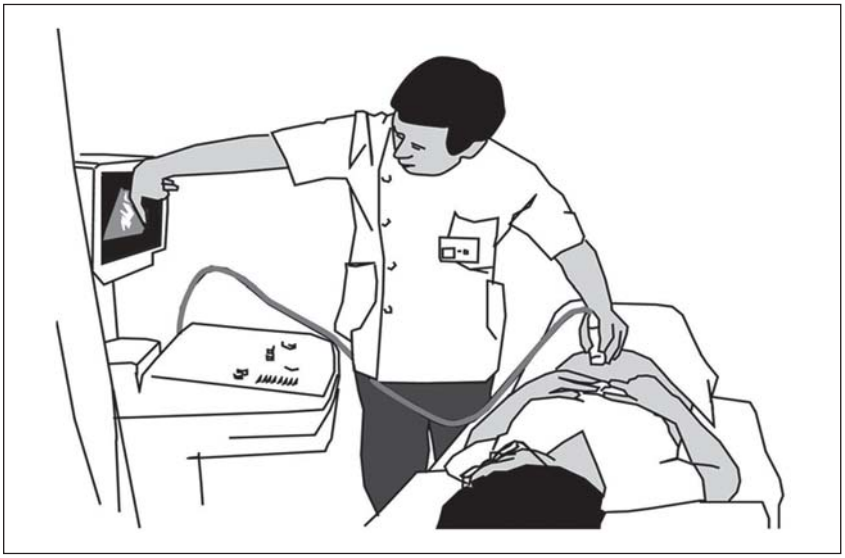

Figure 1. The doctor thrusts his right hand with two fingers downward in front of the screen while uttering '*koo*' ('*like this*') in line 9 of Extract 7.

differentiated image as an orientation point to invite the differentiation of the target image in line 13.

In line 9 of Extract 7, the doctor raises his right hand from the control panel of the ultrasound scanner toward the monitor when he utters '*ashi ga*' ('*the legs*'), and he thrusts his right index and middle fingers downward in front of the monitor when he utters '*koo*' ('*like this*') (Figure 1). This hand gesture, which is spatially and temporally positioned in the vicinity of the screen while the doctor mentions the fetal body parts (the legs), highlights the contour of the image of the fetal legs. Thus, the gray-tone images on the screen are structured such that the image of the fetal legs is differentiated, whereas the hand's shape with two fingers thrust downwards is also structured as *isomorphic* to the presumed fetal leg in this 'contextual configuration' (Goodwin, 2000b).

Furthermore, the hand being shaped in the described manner structures not only the image of the legs, but also the image of the fetal groin, which should be detected on the screen at approximately the juncture of the two fingers. In fact, the doctor here also indicates the groin ('crotch') in the course of inviting the differentiation of the genitals in lines 1 and 14. The shape of the doctor's hand serves as an elaborate resource for the structuring of a 'landmark' for the differentiation of the target image (i.e. the image of the genitals).

Analogy

In the following extract, the midwife invites the pregnant woman to differentiate the image of a fetal ear in line 1. In line 2, the pregnant woman exhibits possible difficulty in accomplishing the invited differentiation.

(8) [JH III: 2: 06: 08–15]

((MDW points to two locations on the screen with her index finger.))

1 MDW: *kore mimi ↓ne:: mimi, mimi.*
this ear P ear ear
"This, an ear. Ear, ear."

2 *(0.6) ((PWM leans her head back.))*

((MDW starts to move her left hand.))

3 PWM *aa aa:↓:: ┌::*
"Yes, ye:::s."

((MDW grasps her left ear and shows it to PWM. See Figure 2.))

4 MDW: *└mimi no koo yuu toko. (0.8) nan' desu*
ear P like_this part JD_PL

5 *↓yo: ┌::*
P
"((It is)) this part of the ear. (0.8) You see."

6 PWM: *└n:::n to: #e*-#*
"We:::ll, #oh-#"

7 MDW: *(┌ ↓ne:)*

8 PWM: *└ja' shita mui te n' da ↓ne::*
then down look JD P
"then, ((it)) looks down, right?"

The midwife raises her left hand toward the monitor when she utters '*kore*' ('*this*') in line 1. Her left index finger reaches the screen at the beginning of the second *mimi* (*ear*), and she makes two pointing gestures to two different locations on the screen: one at each of the second and third *mimi*s in line 1. This entire practice can be perceived to constitute an invitation to differentiate the images of two ears. However, in line 2, a 0.6-second silence ensues, during which the pregnant woman leans her head back as if to inspect the screen. In response to this conduct by the pregnant woman (the absence of the expected response to the differentiation invitation and the inspection behavior), which indicates her difficulty in differentiating the target images, the midwife brings her left hand to her left ear. When she utters '*mimi no koo yuu toko.*' ('*((It is)) this part of the ear.*') in lines 4–5, she grasps her left ear with her left hand and shows the ear to the pregnant woman by twisting her neck (Figure 2). This complex action by the midwife, which consists of an utterance and the displaying of a body part, appears to be a

Figure 2. The midwife grasps her left ear while uttering '*mimi no k̲o̲o yuu toko.*' ('*((It is)) this part of the ear.*') in line 4 of Extract 8. (A child's head appears in the lower-left corner.)

further structuring of the images on the screen so that the images of the fetal ears can be more easily differentiated.

Although the midwife's explanation in lines 4–5 is produced only after the pregnant woman claims in an enhanced manner (i.e. with two information-receipt tokens *aa*) to have differentiated the images, the midwife starts to move her left hand toward her left ear simultaneously with the start of this claim by the pregnant woman. Note also that the midwife adds '*n̲a̲n' desu* ↓*yo*::' ('*You see*') to extend her current turn at talk (in fact, as an increment to the current 'turn constructional unit' (Sacks et al., 1974) in the original Japanese utterance) 0.8 seconds after the turn's possible completion. This addition appears to transform the plain differentiation invitation into a supplementary explanation after the midwife hears the pregnant woman's delayed claim of the invited differentiation.

In Extract 8, the midwife uses a body part, an ear, as a resource to structure the images on the screen. Again, her ear is positioned in the screen's vicinity (see Goodwin, 2000b, 2003; Nishizaka, 2003, 2006). As shown in Figure 2, the midwife twists her neck to position her ear upward toward the screen and enable the pregnant woman to perceive the ear in her peripheral vision when she looks at the screen. In this bodily arrangement, the designated part of the midwife's ear, in turn, is structured as an *analogy* (not merely isomorphic) to the part of the fetal ear purported to appear on the screen.

Enactment

In the following extract, the doctor invites the pregnant woman to differentiate images of fetal facial parts. The doctor does not merely use a single body part as a resource to structure the images on the screen, but he also represents the fetal condition with his entire

upper body after the pregnant woman displays possible difficulty in accomplishing the invited differentiation.

(9) [TE I: 2: 03]

1	DOC:	*.h de: saa (.) koko e ↓orite kite ↓↓kao o miru to:.* then now here to down come face P look P **"Then, now, ((we)) come down here and examine the face."**
2		*(0.4)*
		((DOC slides his left hand ((DOC points to two over the screen twice.)) locations on the screen.))
3	DOC:	*hai .hh <odeko. me.> hana. kuchi.* OK forehead eye nose mouth **"OK .hh <The forehead. The eyes.> The nose. The mouth."**
4		*(0.6)*
		((DOC holds his right hand in front of his face. See Figure 3))
5	DOC:	*shoomen kara mi ↓te 'ru no ↑ ne:: .h mae ni te ga* front from look be P P front P hand P
6		*koo ki te 'ru kedo* ┌: this_way come be though **"((We)) look ((at it)) from the front. .hh The hand covers the front like this, though."**
7	PWM:	└*ha::i* **"Yes."**
8		*(4.0) ((Both participants continue looking at the monitor screen, while the doctor moves the transducer on the pregnant woman's abdomen.))*
9	DOC:	*kore ga: kuchi:* this P mouth **"This is the mouth."**

In line 1, the doctor moves the transducer downward on the pregnant woman's abdomen. In line 3, with his inbreaths (*.hh*), the doctor raises his left hand toward the monitor. The hand reaches the monitor screen at the '*o*' of '*odeko*' ('*forehead*'), and the doctor slides his hand over the screen each time he utters '*odeko*' ('*the forehead*') and '*me*' ('*the eyes*'). Then, the doctor points twice at the screen while uttering '*hana*' ('*the nose*') and

Figure 3. The doctor holds his right hand in front of his face while uttering '*te ga*' ('*the hand*') in line 5 of Extract 9.

'*kuchi*' ('*the mouth*').[5] After these four differentiation invitations are performed, a 0.6-second silence ensues (line 4). This silence can be perceived as the absence of an expected claim of the differentiations from the pregnant woman. The fact that in line 9 the doctor initiates a *re*attempt to invite the differentiation of the image of the same facial part as in line 1 indicates that the doctor himself considers the expected response not yet to have been provided.

The doctor's utterance following the silence in line 4 is composed of two units. In both units, the doctor describes how the image of the fetal face appears on the screen. These descriptions are also hearable as a contribution to the further structuring of the images on the screen. At the inbreath in line 5, the doctor raises his right hand toward his face, and when he utters '*te ga*' ('*the hand*'), he holds the hand in front of his face with the palm downward (Figure 3). His enactment is positioned in the view of the pregnant woman, who looks at the screen. In addition, he continues orienting his face toward the screen, with the result that he positions himself as an object to be perceived by the pregnant woman. Thus, the doctor's entire upper body, which is deployed as a resource to structure the images on the screen, is structured as an analogy to the presumed condition of the fetus.

One should note the construction of the second utterance unit in lines 5–6 ('The hand covers the front like this, though'). This description can also be an account of the possible difficulty that the pregnant woman may experience. That is, the fetal hand in front of the face may hinder the pregnant woman in differentiating the images of fetal facial parts. In particular, the final word *kedo* (*though*) emphasizes this 'account-for-difficulty' nature of the description. The word *kedo* contrasts the possibility of the invited differentiation with possible difficulty in accomplishing the differentiation. Enactment is employed as a structuring practice under these circumstances.

Orders of practices

I note two orders in the examples of structuring practices, cited in the preceding section (Extracts 4–9). First, the examples are arranged from least to most body-involving. Enactment (Extract 9) is the most body-involving, whereas repetition (Extract 4) is the least body-involving. In repetition and multi-layered differentiation invitation, pointing gestures (including sliding or rotating a finger over the screen) are employed, whereas in isomorphism, analogy, and enactment, more varied gestures (such as forming a hand into a particular shape) and more varied body parts (such as an ear and the face), in addition to hands, are involved.

Second, in the first two cases (Extracts 4 and 6) the structuring practices were preceded by the healthcare providers' suggestion of possible difficulty in differentiating, whereas in the remaining cases (Extracts 7–9) the structuring practices were preceded by the pregnant women's *exhibited* possible difficulty. Furthermore, Extract 9 had included both the pregnant woman's exhibition and the doctor's suggestion of possible difficulty at the time of the structuring practice.

Generally, more body-involving practices are employed when possible difficulty is exhibited by a pregnant woman's behavior (such as the absence of an expected claim), rather than being supposed by the healthcare providers. This order is only relative. In fact, the occasions on which analogy and enactment can be used are limited; one cannot display certain body parts (such as the genitals) as analogical examples on every occasion, nor can one enact the position of an internal organ (such as a bladder). However, note that in Extract 9, the doctor enacted the position of the fetal hand, rather than the fetal face, to indicate the image of the fetal face, rather than the fetal hand (see also Extract 10, in which the target of the enactment of the hand position is revealed to be the mouth in the course of the interaction). Analogy and enactment are practices for structuring the entire image on the screen and do not need to include analogy and enactment of the target fetal part.

From this perspective, the following extract is illuminating. It is a deviant case; when the pregnant woman does not exhibit particularly perceivable difficulty in accomplishing the invited differentiation, the doctor employs enactment as a structuring practice. However, it provides strong evidence for the participants' orientation to the relative order of the structuring practices.

(10) [SZ 3: 03: 02-10]

1	DOC:	*<k're okao desu ↓ ne* this face JD_PL P **"This is the face."**
2		*(1.4)*
		((DOC's left index finger reaches the screen.))
		↓
3	DOC:	*omeme.* eye_INF **"An eye"**

4 *(0.4)*

5 PWM: *ha<u>a</u>i.*
"Yes."

6 DOC: *'to otete ga ko<u>o</u>*
and hand_INF P like_this
"And the hand is like this,"

((DOC holds her hand at her mouth. See Figure 4))

7 *(0.8)*

8 PWM: → *°↑ha<u>a</u>a ┌ha<u>a</u>a°*
"Right."

9 DOC: *└chika yotte ki ↓te.*
close come and
"coming closer."

10 *(2.2)*

11 DOC: *moo- (.) ch<u>o</u>tto shita ↓ni k<u>u</u>chi ga a↓ru (n') s'ne:↑<u>:</u>?*
more a_little below mouth P exist JD P
"A little below them is the mouth."

12 *(7.8)*

13 DOC: *>n<u>a</u>nto naku ↓wakari masu k<u>a</u>:?<*
somehow recognize JD_PL IR
"Can you recognize it anyhow?"

In line 1, the doctor announces that the image of the fetal face appears on the screen.[6] The doctor's left index finger reaches the screen at the second *me* of '*om<u>e</u>me*' ('*eye*') in line 3, and it remains there during the 0.4-second silence in line 4. When the doctor starts to retract her finger from the screen, the pregnant woman utters '*ha<u>a</u>i.*' ('*Yes.*') in line 5. Here, no particular trouble in differentiating the eye on the screen is apparent with regard to the pregnant woman. However, the doctor enacts how the fetal hand is positioned in relation to the fetus's face in lines 6–7 (Figure 4). The doctor points to a location on the screen with her left index finger at the second *te* of '*otete*' ('*hand*') in line 6 and then raises the hand toward her own face with all of the fingers folded into the palm. The hand reaches the vicinity of the doctor's mouth during the silence in line 7, and the doctor maintains this posture until the start of her utterance in line 9.

In this context, the pregnant woman's utterance in line 8 ('°↑*ha<u>a</u>a ha<u>a</u>a*°'), which is a downgraded information-receipt compared with the information-receipt token *aa* (*oh*) although it carries certain claim to access to the source of information in contrast to the unmarked token *hai*, appears to be sensitive to the 'trouble-premonitory' (Jefferson, 1980) nature of the doctor's enactment. In fact, when after the 2.2-second silence in line

Figure 4. The doctor holds her hand at her mouth with all of the fingers folded into the palm during the silence in line 7 of Extract 10.

10, the doctor proceeds to the differentiation of the fetal mouth, the observable difficulty in differentiation emerges (lines 12–13). The doctor's enactment in Extract 10 foreshadows difficulty with regard to the images of certain fetal facial parts, and the pregnant woman's response in line 8 ('°↑*haa haa*°') is responsive to this particular (difficulty-foreshadowing) aspect of the enactment. Thus, the enactment in Extract 10 is *prospectively* difficulty-sensitive.

Now, we begin to understand a possible practical ground for an aspect of the personification of the fetus that I mentioned at this article's beginning. The more that possible difficulty in differentiating emerges, the more that bodily involvement becomes a part of the differentiation invitation. The image of the fetus (or a fetal part) becomes increasingly modeled on the (healthcare provider's) body, with the result that the fetus becomes restructured to resemble an actual infant. Independent from the healthcare provider's intention – that is, although he or she intentionally avoids using personifying phrases (as the doctor in Extract 9, who used the phrase *te ga ki te'ru* [*the hand covers*] with the hand at the subject position, rather than the phrase with the fetus as the subject, such as *te o age te'ru* [*raises the hand*]) – the construction of the fetus as a more human-like object appears to be intrinsically implicated in the 'demonstrational' nature of prenatal ultrasound examinations.

Bodily structuring

Multi-modal differentiation

The demonstration of fetal or uterine conditions involves not only the healthcare provider's body, but also the pregnant woman's body. I cite one case to demonstrate how the

pregnant woman's body is involved in the demonstration activity and how it becomes restructured for the activity.

At the time of Extract 11, the image of the placenta, which has been successfully differentiated, appears on the screen. In line 1, the midwife attempts to locate the placenta's lower end on the abdomen while monitoring the placenta's image on the screen.

(11) [JH III: 12]

		((MDW presses the transducer into the abdomen.))
1	MDW:	*koko ra hen made ka↓na* here about till it_looks_like **"It looks like it reaches"**
2	PWM:	*hee: ┌:. e : ┌:: n:n* **"Really. mm."**
		((MDW extends her left hand until the hand reaches the screen and moves the hand, forming an arc.))
3	MDW:	*└koko └ni.* **"Here."**
4		*(.)*
5	PWM:	*n:n ┌n:nn:.↓n ((Nods three times.))* **"Mm mm mm."**

In line 1, the midwife, who continues looking at the screen, slowly moves the transducer downward along the abdomen and presses the transducer slightly into the abdomen while uttering '*hen*' ('*about*'). This conduct by the midwife enables the demonstrative *koko* (*here*) in line 1 to be hearable as a reference to that part of the abdomen into which the transducer has been pressed. However, at this moment, although the image of the (entire) placenta has been differentiated, the image of the lower end may yet have to be located on the screen by the pregnant woman for the midwife's utterance in line 1 to qualify as the demonstration of the abdominal location of *that* part. In fact, the pregnant woman's response in line 2 ('*hee:.e:::n:n*' ['*Really mm*']) is hearable as an information receipt rather than as a differentiation claim (see note 3).

The midwife continues by indicating the image of the lower end of the placenta on the screen in line 3. While uttering '*koko*' ('*here*'), the midwife extends her left hand toward the screen, and when the hand reaches the screen at '*ni*', she moves the hand in an arc on the screen to highlight the contour of the placenta's lower end. The pregnant woman's response in line 5, accompanied by three nods, can be heard as a claim of differentiation, which is, in fact, the multi-modal differentiation of the-image-on-the-screen-caused-by-the-transducer-on-that-abdominal-location.

The demonstration of the abdominal location of the placenta's lower end is only achieved by the integration of the differentiated visual image of the part and the

differentiated tactile sense of the abdominal location touched by the transducer. The midwife's conduct in Extract 11 appears to embody this necessary integration. Thus, in the course of this demonstrational activity, the pregnant woman's abdomen is respecified and restructured as the site on which the fetal and uterine structures, visible on the screen, are to be located.

The embodied integration of visual differentiation of an image on the screen and the tactile differentiation of a particular location on the pregnant woman's abdomen is not limited to these particular cases. The structuring of images on the screen is intrinsically embedded within a restructuring of pregnant women's bodies. As Nishizaka (2011) demonstrated, each differentiation sequence is mapped on the pregnant woman's body. For example, in line 1 of Extract 9, the doctor indicated on the abdomen the relative position of the fetal body part (i.e. the face) to be examined, with an utterance that included a locational demonstrative term ('*.h de saa (.) koko e ↓orite ki te ↓↓kao o miru to:.*' ['*Then, now, ((we)) come down here and examine the face.*']).[7] This term could be heard to refer to an-abdominal-location-for-the-fetal-part-currently-on-the-screen. The same is true of the doctor's announcement in line 1 of Extract 10 ('*<k're okao desu ↓ne*' ['*This is the face.*']), although the doctor did not indicate an abdominal location explicitly; the demonstrative term, *un*accompanied by any finger-pointing gesture, referred to the-entire-image-on-the-screen-as-the-result-of-the-operation-of-the-transducer-on-the-abdomen.

The pregnant woman's body is restructured to meet the ongoing requirements of the demonstrational activity. This restructuring also provides the pregnant woman with opportunities to take the initiative in a further restructuring of her body. I now turn to such a case.

Initiation of a sequence for a body restructuring

Extract 12 is the continuation of Extract 11. Following the demonstration of the extension of the placenta, the midwife proceeds to explain where the placenta is located inside the pregnant woman's body.[8] During the explanation, the midwife employs more body-involving practices to restructure the abdomen. In lines 6–7 and 9, the midwife says that the placenta is located at the top or front of the uterus.

(12) [The continuation of (11)]

5 PWM: *n:n ┌n:nn:↓n ((Nods three times.))*
"Mm mm mm."

((MDW covers the abdomen with her left hand,
while looking at the abdomen. See Figure 5))

6 MDW: └*docchi ka tte yuu to koo shikyuu no teppen no*
which_way P say P this_way uterus P top P

Figure 5. The midwife covers the abdomen with her left hand and looks at the abdomen while uttering '*shikyuu no*' ('*of the uterus*') in line 6 of Extract 13.

		((MDW points to the screen. See Figure 6a.)) *((MDW turns the hand over. See Figure 6b))*
7		*tokoro ni:. (.) ↓bo yoo:.:n ┌to tsui ↓te, ↑mae gawa ni┐ ne =* place P MIM P placed front side P P **"Rather on top of the uterus, (.) like *bo yoon* ((it)) is placed, on the front side, of the mother." [Including line 9]**
8	PWM:	└*↓f u u : : :. :. n* ┘ **"Is that so:::::."**
9	MDW:	*= okaa ┌san (no)* mother P

In line 6, the midwife, while turning to the abdomen, brings her left hand from the screen to the abdomen and covers the abdomen's upper part with the hand (Figure 5). Produced in conjunction with the abdomen and the words '*shikyuu no teppen*' ('*top of the uterus*') in line 6, the hand gesture can be perceived to represent how the placenta is placed relative to the uterus, which is supposed to be directly beneath the abdomen. With

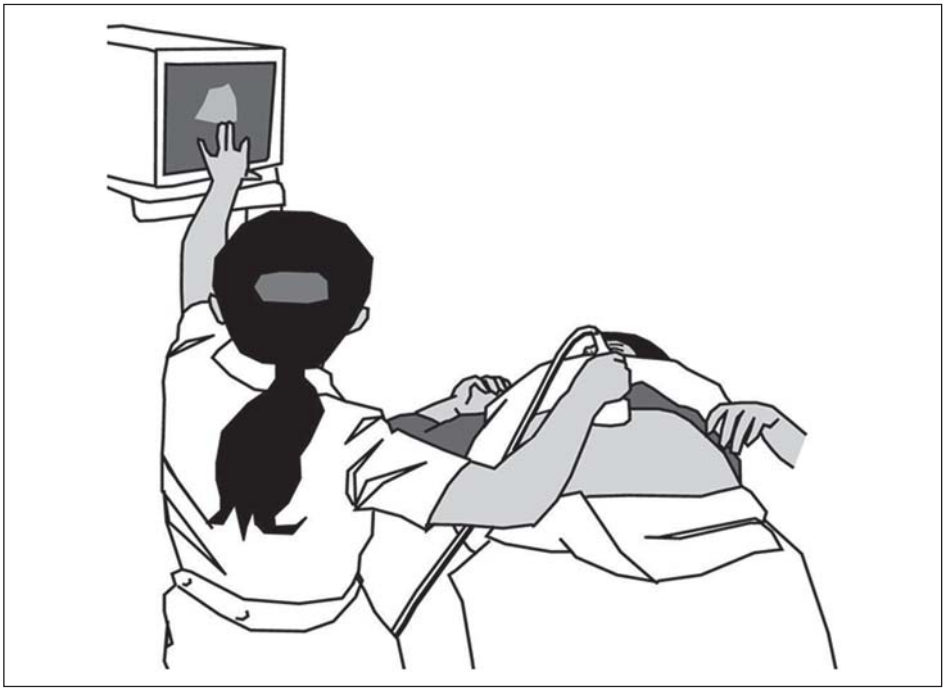

Figure 6a. The midwife points to the screen with her left second and third fingers while uttering '*tsui*' ('*placed*') in line 7 of Extract 13.

this complex conduct by the midwife, which consists of a hand gesture (over the abdomen), a gaze direction (to the abdomen) and an utterance, the midwife's hand and the pregnant woman's abdomen are (re)structured as isomorphic to the placenta and the uterine wall, respectively.

Next, the midwife raises her left hand toward to the screen again. She points to the screen with her left second and third fingers, while uttering '*to tsui*' ('*placed like*') in line 7 (Figure 6a), and she turns her left hand over in front of the screen, while uttering '↑*mae gawa ni*' ('*on the front side*') in line 7 (Figure 6b). The same hand as used as isomorphic to the placenta over the abdomen is used to point to the image of the placenta on the screen. In this manner, the image on the screen is now restructured to represent the placenta beneath the abdomen. The turned-over hand, now with the palm directed toward the pregnant woman's abdomen, appears to connect the current image on the screen to the previous hand gesture over the abdomen, which was made at '*shikyuu no*' ('*of the uterus*') in line 6. Thus, combined with the words '↑*mae gawa ni*' ('*on the front side*'), the hand further restructures the image relative to the pregnant woman's abdomen, whereas the hand is also restructured again as isomorphic to the placenta.

The pregnant woman responds to the midwife's explanation with the information-receipt token *fuun* (*Is that so*). Then, the pregnant woman proceeds to demonstrate how she understands the explanation in the following manner.

Figure 6b. The midwife turns her hand over in front of the screen while uttering '↑*mae gawa ni*' ('*on the front side*') in line 7 of Extract 13.

(13) [Continuation of (12)]

9 MDW: = *okaa* ⌜*san (no)*
mother P

10 PWM: ⌞↑*a .h ho:nda de itsu mo nanka::-* ⌜*: ↓are da* ↓↓ *ne* =
oh that's_why always well that JD P
"Oh, .h that's why always well that is so,"

11 MDW: ⌞*n::n*
"Mh mm"

12 PWM: = *shin on ga tooi 'tte yuu ↓ka*::
heartbeat P distant or
"the heartbeat sounds distant, or something."

((MDW, while looking at PWM, erects her left hand over the abdomen.)) *((MDW erects the hand at the side of the abdomen.))*

13 MDW: *aa:::::: soo ↓ne:: taiban* ⌜*ga atte:: a*⌝ *ka chan ga:: =*
Oh so P placenta P be baby P
"Oh, right. The placenta is ((here)), and the baby is,"

14 PWM: └ *n n n::n* ┘
"Yeah, yeah, yea::h."

15 MDW: = ↓*dakara: (.) tooi wa ne?=* ┌*kyori ga* ↓*ne::=de*┐ *kore* =
so distant P P distance P P and this
"so (.) ((it)) is distant, the distance is.=And these are (.) legs."
[Including line 17]

16 PWM: └ *n n n : : n* ┘
"Yeah, yeah, yea::h."

17 MDW: = *(.) ashi* ↓ *ne*
leg P

In lines 10 and 12, the pregnant woman mentions what she has been experiencing during examinations, that is, that the fetal heartbeat always sounds distant. She introduces this utterance with a marker of remembering (or 'change-of-state' (Heritage, 1984b), i.e. '↑*a*' ['*oh*']) and an inference preface (i.e. '*ho:nda de*' ['that's why']). Thus, the pregnant woman initiates a sequence that is more or less expected to be completed by the midwife's (i.e. an expert's) acceptance or rejection of the inference (see Heritage, 2012).

In line 13, the midwife accepts the pregnant woman's inference. In the course of the acceptance, the midwife erects her left hand first over the abdomen, while uttering '*ga atte*::' ('*is ((here))*') (Figure 7a), and she then lowers her hand in the same shape to the side of the abdomen, while uttering '*aka chan ga*::' ('*the baby is*') (Figure 7b). The midwife's hand is restructured as isomorphic to the placenta and then to the fetus consecutively, and the pregnant woman's abdomen is thereby restructured such that a new item, introduced by the pregnant woman – that is, the fetus ('baby'), is incorporated into the abdomen's virtual structure.

While gesturing with her hand in line 13, the midwife looks steadily at the pregnant woman's face, which indicates that she currently engages in more face-to-face interaction outside the ultrasound examination. Additionally, the pregnant woman turns to the midwife's face from the screen when the midwife makes her first hand gesture. That is, the participants' mutual gaze is established during line 13. Thus, the interactional segment, during which the further restructuring of the abdomen with a newly introduced component is achieved, appears to be specifically configured for the sequence initiated by the pregnant woman, not by the midwife.

Conclusion

In prenatal ultrasound examinations, the visualization of pregnant women's internal structures is not merely a matter of mechanics, but also a matter of embodiment and interactional organization. This visualization is intrinsically embedded in the interactional organization of action-sequencing. When possible difficulty in differentiating an image on the screen is exhibited by the pregnant woman's responding action, the healthcare provider employs practices that use increased bodily involvement to structure the images. Additionally, the visualization is intrinsically embedded within a spatially and modally distributed demonstration of the current fetal and uterine conditions. This

Figure 7a. The midwife erects her left hand over the abdomen while uttering '*ga atte*::' ('*is ((here))*') in line 13 of Extract 14. The midwife and the pregnant woman look at one another.

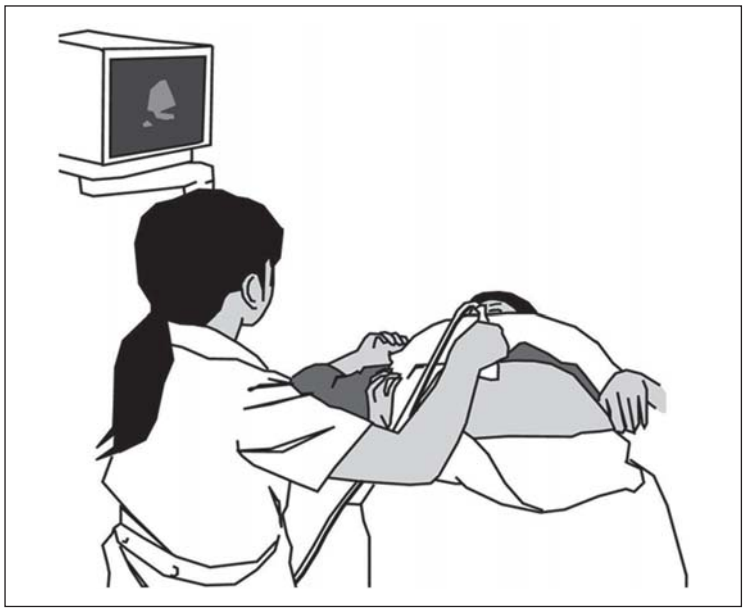

Figure 7b. The midwife erects her left hand at the side of the abdomen while uttering '*aka chan ga*::' ('*the baby is*') in line 13 of Extract 14. The midwife and the pregnant woman continue to look at one another.

demonstration is distributed spatially – between the screen and the participants' bodies, and modally – among vocal/auditory, visual, and tactile modes of orientation. The visualization, which results from the structuring of screen images, involves the restructuring of not only the healthcare provider's body parts, but also the pregnant woman's body.

Certain scholars are concerned that obstetric ultrasound may cause personification of the fetus, that is, the perception of the fetus as an autonomous agent, which may impinge on women's reproductive autonomy. To avoid such a result, Mitchell (2001: 207–208) proposes that the fetal image on the ultrasound monitor 'should be described in terms of anatomy and development rather than activity, agency, and subjectivity', given that 'the sonographer's silence is often interpreted by women as a sign that ''something is wrong'' '. However, as indicated earlier, the construction of the fetus as a human-like agent *may* even be intrinsically related to the demonstrational activity in prenatal ultrasound examinations, although all of the fragments of interaction analyzed in this study were extracted from abdominal ultrasound examinations with women in the later stages of pregnancy.

In contrast, I have shown that the restructuring of women's bodies with regard to the requirements of the demonstrational activity may provide these women with opportunities to initiate the integration of their various experiences of their bodies (including experiences at previous prenatal examinations, which form parts of their unique histories) into a new restructuring of their bodies. Interestingly, the pregnant woman in Extract 13 described her experience of the fetus (i.e. how she had been experiencing its heartbeat during a series of examinations), whereas the midwife integrated it into the description of the entire internal structure of the pregnant woman, by incorporating the fetal condition as part of the pregnant woman's anatomy. The meaning of fetal images and the experience of one's body and the fetus are constructed and reconstructed, defeated and negotiated through the deployment of talk and embodied practices, in conjunction with the ultrasound monitor, transducer and control panel, in the actual course of interaction. I do not pretend to predict the future of relationships between technology and the experiences of one's body (see Cussins, 1996; Haraway, 1991; Thompson, 2005, for various prospects). However, detailed investigations of what occurs in interaction, such as this study, can reveal certain aspects of what the participants actually do and experience in technological environments, and how they jointly manage what they do and experience.

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Notes

1. All of the extracts cited in this article are composed of three tiers. On each numbered line, there is first a Romanized version of the original Japanese. Below this is a phrase-by-phrase gloss, and finally, on the third and lowest tier, an approximate English translation in bold. The first tier of the transcript uses a transcription system developed by Gail Jefferson (see Jefferson, 2004, for the most recent version). In the second-tier glosses, I use the following abbreviations: INF for 'Infantile', IR for 'Interrogative', JD for 'Judgmental', MIM for 'Mimetic', P for 'Particle', and PL for 'Polite'. In each extract, the letters and Roman numerals in brackets next to the extract number identify the pregnant woman. The arrows indicate targeted utterances.

2. Note that for the demonstration of the current fetal condition, pregnant women do not need to *recognize* the mentioned fetal part on the screen; however, they must discriminate a feature on the screen that is interpretable as the mentioned fetal part.
3. Many types of response tokens are used at the position for the second action type. Note that all of them do not work in the same way. The tokens *hai* (*yes*) and *nn* (*yeah*) are the most neutral ones. The token *aa* (*oh*) registers the speaker's receipt of the information provided in the previous turn-at-talk, with the claim to have obtained access to the source of the information; the production of this token achieves a type of noticing. The tokens *fuun*, *haa*, and *hee* (which can be glossed as *Really*, *Is that so* or the like) registers that the speaker receives the provided information only in the terms of the provider of the information; the tokens do not carry any claim to access to the source of the information. Generally, the production of the last group of response tokens cannot achieve a differentiation claim even if it occurs at the position at which a differentiation claim is expected. However, the double or multiple production of *haa* (e.g. *haa haa*) can be a differentiation claim.
4. The pregnant woman's partial repeat of the doctor's preceding utterance (line 5) may appear to initiate repair (Schegloff et al., 1977), but combined with the acknowledgment token in line 7, the entire turn-at-talk (lines 5 and 7) is rather hearable as a registration of the information conveyed by the doctor's utterance. See Schegloff (1996: 177–180) for an overview of various usages of repeats in talk-in-interaction.
5. In line 1, the doctor has announced that he will examine the fetal face. This announcement functions as a 'preface' (see Sacks, 1978) that projects the goal of differentiating the entire face on the screen. Thus, the differentiation of each facial part on the screen is understandable as part of the differentiation of the entire face.
6. The doctor does not use any finger-pointing gestures, although she uses a demonstrative term in line 1. The demonstrative term *kore* (*this*) appears to refer to the entire image *currently* on the screen. I will return to this point later.
7. The construction of '*koko e ↓orite ki te*' ('*come down here*') appears to be similar to what Ochs et al. (1996: 358) calls an 'indeterminate construction', which combines a personal pronominal subject with an inanimate physical event predicate. Although the construction in question does not contain any subject word, the predicate *orite* (*come down*), together with the second predicate *miru* (*examine/look at*), is hearable as assuming an animate subject. However, what comes down actually is the transducer in the doctor's hand, not the doctor or the pregnant woman. This 'indeterminacy' (regarding the subject) may be related to the structuring effect that the successive movements of the transducer have on the woman's entire abdomen.
8. The midwife's utterance cannot be heard as a differentiation invitation. Although the pregnant woman can differentiate the abdominal position of the placenta using the image on the screen and the abdominal position of the transducer, it is presumably impossible to differentiate how the placenta is attached to the uterine wall. For this differentiation, one requires at least some information about the depth of the target object, which can be adjusted using the control panel.

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