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Fixing Unfixable Bodies

Expectations and Metaphors of the Body Among Patients and Surgeons in Elective Orthopaedic Surgery in Denmark

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Abstract

In this article we examine how patients of elective orthopaedic surgery might transform the understanding of their body's fixability over time. The article builds on an ethnographic fieldwork at an elective orthopaedic unit in Denmark and follow-up interviews with two patients eighteen months after their surgery. Through the affective theoretical framework of Lauren Berlant's *Cruel Optimism*, we discuss how the patients experience the part-loss of functionality. We trace the transformations in their expectations of their body through their use of metaphors. Drawing on Alan Bleakley's division of the metaphors of the body into 'body-as-machine' and 'body-as-ecology', we argue that patients end up describing their bodies through both these metaphors, and come to understand their bodies as not being fixable, but as being in ongoing process.

Keywords

Surgery, Patient Narratives, Metaphors, Medical Humanities, Orthopaedic Surgery.

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Introduction

Do you know someone who has had knee or shoulder surgery? Most likely you do if you have not undergone a procedure yourself. Of the many different surgical sub-specialities the seemingly mundane field of orthopaedic surgery is one of the very largest. In Denmark, where the fieldwork that underpins this article took place, it is the largest surgical field overall, with about 85,000 annual surgical procedures (Dansk Ortopædisk Selskab 2022). Behind this number is a host of individual patients, whose experiences of both entering the surgical units and living with their repaired bodies after surgery represents an underexposed field in medical anthropology and medical humanities. Through data from ethnographic fieldwork and qualitative interviews, we engage with the field of orthopaedic surgery by focusing on how orthopaedic patients metaphorically conceptualise their own bodies as they enter surgery and through the long process of potential recovery. The article is based on fieldwork focusing on awake orthopaedic surgery, where patients can follow the operation on screens, seeing the inside of their bodies and the sites of their injuries while the surgeons operate. It explores how patients and surgeons alike speak of and conceptualise human bodies, and how these understandings change in the transition from before, to during and after the surgical moment. We are interested in exploring the way that what patients see becomes woven into both the metaphors they use and their lived experience.

This interest in metaphors is built on the recognition that medicine, like most other human domains, is rife with metaphors, and that these are worthy of close attention because they play important roles in constituting both mental concepts and modes of living (Neilson 2020; Bleakley 2019; Wohlmann 2022). Metaphors in medicine shape patient experience, and can both guide actions and foreclose options. What is more, they generate a linguistic and bodily life of their own around which our experience accretes (Richardson and Grose 2009). We focus on metaphors in orthopaedic surgery because, as a field, orthopaedics lends itself to a very particular and very important medical metaphor: that of ‘the body-as-machine’ (Bleakley 2017). We consider orthopaedic surgery a valuable site on which to study this foundational metaphor, because of how the field articulates and understands itself, and of how patients encounter it. For instance, textbooks will tell you that orthopaedic surgery engages with the *locomotive apparatus* of the human body (Krogsgaard et al. 2009), meaning the structure which allows the movement of the body. ‘Locomotive’ is also a word describing the part of a train that pushes all the carriages forward through the power of an engine, and ‘apparatus’ is a word for a machine, an instrument, or a tool. Other textbooks write that orthopaedic surgery is about the *biomechanics* (Buckwalter, Einhorn and O’Keefe 2007), emphasising the mechanical functions with framings such as: ‘The behaviour of the human musculoskeletal system, although complex and dynamic,

can be described by, and obeys, Newton's laws of mechanics' (Lichun, Kaufman and Yaszemski 2007, 49). These are all descriptions which emphasise orthopaedic surgery as engaging with the human body from a mechanical and machine-like perspective. It draws forth visions of steam engines and automatons, of gears, axles, levers, and cogwheels; of things that move by application of mechanical force and kinetic energy. Few medical specialties lend themselves so well to the idea of the body as a car and the surgeon as an automotive mechanic rummaging around under the bonnet to get the wheels running and the gears moving. If ever the body were a machine, it would seem to be in orthopaedic surgery.

From this initial recognition of the importance of machine metaphors in orthopaedic surgery, we investigate what expectations of the body exist among patients and surgeons; and how—on an individual level—these expectations are shaped and adjusted between metaphors of the body, the experience and craft of the surgeon, and the lived life of the patient. In doing so, we follow medical humanities scholar Alan Bleakley's proposition that 'metaphors both shape and generate insight into relative "health" and "suffering" where metaphors are embodied and grounded in activity. Metaphors are "good to sense with" as well as good to think with' (2019, 210). In other words, given the centrality of the machine metaphor to Western medicine in general—and the importance of metaphors in understanding clinical encounters—it is worth examining how such metaphors play out in a field that is thoroughly suffused by them. This examination is partly also motivated by the long-standing critique of the impact of this metaphor on science in general (Pigliucci and Boudry 2010) and medicine in particular (Vaage 2020; Bleakley 2019). More specifically, we will in this article examine how the metaphor of body-as-machine interweaves with patients' hopes for, and surgeons' navigation of, degrees of 'fixability': the restoration of (some) physical functionality through surgical intervention. As Bleakley has suggested, the longevity of the machine metaphor has come about in part because this metaphor 'is functional, reducing unpredictable complexity to predictable linearity. This is comforting as it reduces uncertainty or ambiguity. Once the body is configured as a machine, it becomes potentially fixable and can be engineered' (Bleakley 2017, 3).

The purpose of this article is thus dual. On the one hand, we aim to contribute to medical humanities literature by creating a better understanding of a large surgical field and of the patients that encounter it. Orthopaedic surgery has been largely overlooked, with notable exceptions being the work of Rachel Prentice, who visits the orthopaedic space when exploring surgeons' training and embodiment (Prentice 2007; 2012; 2021), and philosopher Helene Scott-Fordsmand, who focuses on attunements and emotions of the orthopaedic practitioners (Scott-Fordsmand 2022). We further contribute to this field by addressing the perspective of the orthopaedic *patients*. The role of the patient is also central to the work of

Shahaduz Zaman, whose ethnographic dissection of an orthopaedic unit in Bangladesh argues that the unit is a mirror of Bangladeshi society, where the social rules of poverty, gender roles, hierarchies are played out (Zaman 2005).This article, moreover, contributes to the growing body of work in medical humanities on the complex and important role of metaphor in clinical practice and patient experience. We do so through a close, qualitative engagement with the material gathered through the fieldwork, looking for the metaphors utilised by both surgeons and patients when they articulate their understandings of, respectively, the body they work upon and the body they live within. The article unfolds in three parts, each grounded in fieldwork and interviews: first, an examination of how orthopaedic surgeons metaphorically describe the body; second, a study of how patients understand their own bodies immediately before and after their awake surgeries; and third, a follow-up study 18 months after surgery. Ultimately, the article will show how both surgeons and patients attempt to navigate the implicit claims of fixability carried within the metaphor of the body-as-machine (Bleakley 2017) by layering the metaphor with ideas of change and fluidity, moving it away from a binary fixed/broken state into a more relational and processual register. It should be noted that we are generally using the word ‘fixable’ in the sense of ‘repairable’, but rather than substituting one for the other, we leave room for the double meaning of ‘fixed’—that is something that can be made unmoving or unchanging.

Field study and methodology

The fieldwork behind the article was conducted in two rounds. The main fieldwork was conducted in November 2019–February 2020 at an orthopaedic surgical unit at a larger public Danish hospital. Gatekeepers to public orthopaedic units are most often the GP, and treatments in the public hospitals are free of charge. Patients also have the possibility of being treated at private hospitals. All surgeries observed in this study are elective surgeries, implying they are planned and not acute. Patients in this unit are treated for a variety of injuries; some caused by sporting activities or work injuries, but also some by underlying illness. Therefore, patients also vary from young athletes or members of the army to elderly people suffering from brittle bone disease or diabetes. A shared feature for several patients was that the surgery was scheduled, and in most cases it was the last option after trying out more conservative treatments such as physiotherapy.

The main data from the surgical unit consists of field notes and observations of the routines surrounding the surgical situation—in some instances following the surgeon’s routines and preparations before surgery, and at other times following how the patients were prepared for the surgery. Grytter followed surgeries from a

corner of the surgical space, to observe the interactions and conversations between the patient and the surgeon, and at times also between other staff present in the surgical theatre. After the surgery, the patient would be taken to a different unit, to be observed by nurses and advised by physiotherapists regarding rehabilitation. Most patients would return home the same day, depending on the surgery and type of anaesthesia. Shortly before discharge, Grytter would conduct interviews with the patient, to capture immediate experiences and response to surgery. To ensure that the interviews were conducted in an ethically responsible manner, both the patient and the nurse taking care of the patient would be consulted, to obtain approval that the patient was feeling well enough to be interviewed. In two instances the patients were not feeling well enough to interview, and interviews were then conducted by telephone in the days following the surgery. Interviews in the hospital would last between 20 and 60 minutes, and were semi-structured. This study builds on observations of 18 orthopaedic surgeries, 14 interviews with patients, and four interviews with two surgeons. Besides this, the data also consists of several hours of informal conversations with patients, surgeons, anaesthetic nurses, and doctors, as well as field notes taken throughout fieldwork.

In June and July 2021, Grytter did follow-up, in-depth interviews (1.5 hours) with two patients and one surgeon. These interviews took place outside the orthopaedic unit, at Medical Museion. Both participants were patients in the first fieldwork sessions at the orthopaedic unit, and the second set of interviews were conducted to gain both an impression of the lived experiences after an injury and orthopaedic surgery, and to investigate whether patients' expectations of their bodies might have altered over time, as effects of their surgery became apparent over time. One surgeon was also interviewed to further explore and qualify different factual and analytical points, as well as to explore metaphors used by surgeons outside the clinical context. After the data collection, interviews were transcribed and coded thematically (Attride-Stirling 2001; Madden 2017). All informants have been anonymised in the transcribed material. Both patients and surgeons were verbally informed about, and given informational material regarding, the project; and all gave signed consent to participating in the project. The research follows the rules of GDPR and the Danish Data Protection Agency. In Denmark, qualitative studies do not require approval from the Scientific Committee of Ethics. The research was also influenced by a patient-partnership strategy, meaning that it was developed with comments and suggestions from both patients and surgeons. In the second round of interviews, patients and surgeons were asked to give special feedback on some of the analytical points that emerged from the first fieldwork. This provided an opportunity to correct misunderstandings, to nuance and further give depth to the analysis.

1. Metaphors among orthopaedic surgeons: Between fixability and functionality

Interview with Svend, an orthopaedic surgeon, June 2020

Grytter: If you were to describe orthopaedic surgery with a metaphor, what would it be?

Svend: A homely car mechanic. It's always been a caricature [of orthopaedic surgeons] that they're rummaging about under cars. Fixing things.

Grytter: If you then were to describe the body as a concept, with a metaphor, what would it be?

Svend: Well, now you're asking me about something different than orthopaedic surgery (. . .) I think we're just a wandering colony of bacteria or—with COVID—RNA. So, an interaction between a bunch of biological structures that happens to have become a mammal, which then have become human, but perhaps we are just in the power of bacteria and viruses. A pile of life. But that doesn't have anything to do with orthopaedic surgery.

Grytter: Okay. Through the eyes of orthopaedic surgery, then with what image would you use to describe the body?

Svend: In orthopaedic surgery we engage with the body as locomotive apparatus.

Svend expresses a dual understanding of the human body. Through the lens of the orthopaedic surgeon as a medical professional, the body is described as 'a locomotive apparatus', a machine the orthopaedic surgeon is trained to repair, in the mode of an automotive technician fixing a car. However, looking beyond the lens of orthopaedic surgery, the surgeon applies a more dynamic view of the body as a complex biological structure and a host for bacteria, RNA and viruses—in other words, the body as a living structure that is affected by the surrounding world in complex systems. Svend uses phrases such as 'colony of bacteria' and 'a pile of life' to describe the human body, but explicitly sets these phrases aside from his orthopaedic practice: 'that doesn't have anything to do with orthopaedic surgery'. Svend clearly places what he does in the context of the body-as-machine, even as he holds a more ecosystemic set of metaphors of the body alongside this conception. The metaphor of the body-as-machine is one of the two foundational metaphors of Western biomedicine, the other being the metaphor of illness as 'war' (Bleakley 2017). The metaphor has deep roots in the long history of science and

can be traced back to ancient Greek philosophy, even if it most commonly is associated with French philosopher René Descartes (see Lowney 2011; Gaukroger 2009). Modern science, it has been argued, can be said to build on the modelling of nature in terms of machinery—including medicine and medical science (Bongard and Levin 2021; van Lunteren 2016). The history, importance and potential problems related to the widespread uptake and systemic embeddedness of the body-as-machine have been studied in detail by several humanities scholars (e.g., Fuks et al. 2011; Wohlmann 2022; Bleakley 2017). Rather than recounting this long tradition, we here build from the notion of 'fixability' that Bleakley argues in the quotation above: that the body-as-machine gains part of its conceptual strength from the implication of fixability; identifying the problem, fixing the right parts, or replacing them makes the machine as good as new. The implied fixability exerts a strong gravitational pull both for patients and surgeons, shaping expectations and practices. In a harrowing study of excessive back surgery in the US healthcare system, anthropologist Megan Crowley-Matoka notes that patients sometimes hold on to this sense of fixability even through multiple failed surgeries:

> For such patients it is not just the promissory hope of being fixed that surgery thus holds out, but the confirmatory designation of being fixable (even just potentially) that surgical candidacy can confer—and which may be retained, regardless of the eventual success or failure of the surgery itself. And so, the all-too-fallible material fix offered by back surgery may be coupled with—even enabled by—a kind of ontological fix, one that may actually prove more enduring (2020, 65).

At first glance, care is often taken to manage this implied hope for a linear fixability when preparing patients for orthopaedic surgery. Instead, the trope of 'functionality' seems more prevalent. For example, when invited for surgery, patients will receive an information folder. The 'results section' of the folder indicates the anticipated outcome of the surgery from, for instance, a lesion of the rotator cuff, which is a tear or injury to the tendon. The information folder for shoulder arthroscopy states:

> If the tendon injury is repaired fully, a fair amount of strength will return to the arm without any substantial pain. The strength will however never be as good as before the injury. Approximately 80% gains improved mobility and pain relief.

This 'results section' reflects how patients are informed about their expectations regarding surgical outcomes. Firstly, the shoulder will not return to the state it was in prior to the injury—although this is not something the surgeons in the unit promise as an outcome of the surgery. Secondly, the tendon can be repaired fully; and while this does not imply a return to a prior state, in most cases it will however improve 'mobility and pain relief'. In other words the shoulder will never return to

the condition it was in before the *injury,* but it is likely to become better than it was before the *surgery*. During the fieldwork, Grytter did not encounter any promises to fully fix the patient body—not in the brochures, nor during the surgeries, nor the interviews with surgeons. Rather than 'fixability' they talk about 'functionality'. In an interview Morten, an experienced orthopaedic surgeon who focuses mainly on shoulder surgeries, says:

> What I do is elective orthopaedic surgery, which includes patients who come in with a complaint—like pain, an instability or similar. And then I try to help them gain a higher level of functionality.

This statement suggests an orthopaedic surgical approach to the body as a place that strives for differentiated degrees of functionality, rather than a binary division between 'broken' or 'fixed'. Accordingly, even though the mechanical metaphor of the body thrives both in textbooks about orthopaedic surgery and in the way orthopaedic surgeons articulate their own craft, the mechanical metaphor does not—among the surgeons interviewed for this study—hold out a clearly articulated linear promise of fixability. The body is clearly spoken of and conceptualised as a machine, but not necessarily a machine that can be fixed in the linear sense implied by classical studies of machine metaphors in medicine. In the following interview quotation, the surgeon Svend elaborates how a body is not just a machine, but a place that needs to be understood as always in process and treated in relation to other factors such as age.

> Nothing is 100% certain. We can't see everything, and we can also be wrong. It is not that tissue is either normal or abnormal. It is also in process. We can say, 'This tissue is a bit worn and marked by age, and different from the tissue of an 18-year-old, who has fresh tissue that has never been damaged.' But there's no razor-sharp distinction between being healthy and ill. This is not just in shoulder conditions, it's in everything. You cannot simply say that you are either healthy or ill.

Svend highlights a pivotal point: the body cannot be defined as being either healthy or ill—it is always in a *relational process*. As philosopher Georges Canguilhem argues, pathology is a normative phenomenon—whether a body is seen as normal or pathological is fundamentally shaped by external factors (Canguilhem 1989). Svend also points to the fact that this transition is relational—in the above, the condition of tissue is related to the individual age of the patient.

We have now introduced how mechanical metaphors of the human body are present in the way orthopaedic surgeons might articulate and understand their patients' injuries. The mechanical metaphors of the body are extremely common in orthopaedic surgery. However, to orthopaedic surgeons, approaching the patient body with a mechanical understanding does not imply an expectation or a

promise of a linear recovery and complete fixability. It holds an intention of improving the *functionality* of the body. The patient body is approached as being in *process,* and the status of health is always defined in *relation* to a number of other factors, for instance age. However, as we will draw out in the next section, the patients' own expectations of their bodies right after surgery often lean more heavily into the linear fixability implied by the metaphor of the body-as-machine. Despite the surgeons' less binary engagement with the body, or what the expected outcome of a surgery is promised in an information folder, patients are—understandably—often less nuanced in their own expectations and hopes for the surgical outcome. They come to the surgical unit to be fixed.

2. Andrea in surgery: How fixability is enacted in patients' expectations of surgical outcomes

The background for the following analysis draws on several patient accounts, but in this article, we mainly follow and highlight the stories of two patients, here called Mads and Andrea. For this part of the analysis, we will draw on our first meeting with them on the day of their surgery.

In the surgical unit Grytter meets Andrea for the first time. Andrea is a woman in her fifties working in finance and human relations, and is about to have surgery on her right ankle. She had a ligament injury more than two years previously, and in the diagnostic process the surgeon also located three bone fragments, which are the reason for the current surgery. During the surgery, Andrea lies calmly on the surgical bed with her head resting to the side. Her body is covered in a blue surgical sheet, except for her ankle and lower leg, where the skin is yellow from disinfectant fluid. In the interview after the surgery she talks about the long process leading up to the surgery, and how she consulted several doctors during the two years of diagnostic process. The first doctors she saw thought that she had only partly torn a ligament in her ankle, and that she did not need surgery, but the pain continued, and Andrea was convinced that something else was wrong. She explains how the long process leading up to the surgery had many consequences to her everyday life and wellbeing. Before the pain started, she had an active life:

> I got the injury in July 2017 [more than two years prior to the surgery and interview], so I've been walking around with it for a long time. Considering how I was used to running 30-40 km a week, attend three hours of spinning classes and bike 14 km—well then it's a radical change. Sport gave me so much quality of life, and I just had to throw in the towel. It was rough.

The years of diagnostic process leading up to the surgical intervention have altered Andrea's everyday life—she has experienced a loss of her physical ability to exercise and thereby what she describes as 'quality of life'. During the surgery, when the surgeon removed the three pieces of bone fragments, a nurse showed them to Andrea. In the interview following the procedure, Grytter asked her what it meant to her that the bone fragments were removed from her foot, and what it meant to see them.

> It means that now I'm thinking that it [the pain] will go away. I just thought it would be fun to see what set this off. I haven't at all been able to run for the past two years with the injury in my foot, and you feel really restricted in your conditions of life, by not being able to move. Now I've seen what 'triggered' me.

Having the pieces of bones removed from her foot indicated to Andrea that a reason for her pain has been physically removed, and seeing the fragments served as a concrete confirmation of why she had not been able to use her foot. She expresses a hope, perhaps even an expectation, that by removing the rogue pieces of bone the injury has been fixed, and that she might be able to go back to living an active life.

This expectation came up frequently throughout the field study. To most patients in this elective orthopaedic unit, the hope of returning, post-surgery, to life prior to their injury is ever-present. Patients would, just before or right after surgery, often use the verb 'to fix' or the adjective 'fixable' about their body. When Grytter asked another patient, the shoe-salesperson Albert, how he was feeling leading up to the surgery, he replied: 'I've been worried, because I can't function in my everyday if this surgery doesn't work. It's important for me that this has a positive outcome, so I can function again. I just want my shoulder to be fixed.' In this transformation from broken to fixed is layered an optimism for the future, where the future state of the body is in fact a return to the state the body was in prior to the injury. In Andrea's case she is optimistic that she will no longer be 'impaired' because the reason for her pain has been removed. Using Bleakley's insistence on how the metaphor of the body-as-machine lends itself to an expectation of fixability, we can see how such expectations play into the clinical encounters. Andrea draws out the contours of a linear expectation of recovery. This clashes with the surgeon's understanding of the state of a person's body as always being about levels of functionality, not as an entity that can be completely fixed by changing the broken parts.

In order to further explore this tension between the expectations implied by the fixability inherent in the metaphor of the body-as-machine and the reality of the possible outcomes offered by surgery, we will employ the theoretical notion of 'cruel optimism', as proposed by the cultural theoretician Lauren Berlant (2011).

We use it here to discuss how patients' expectations of their bodies as being fixable might become an obstacle to finding a way to move forward in life after surgery without being 'stuck' on a return to life as it was pre-injury. Berlant describes how 'the affective structure of an optimistic attachment involves a sustaining inclination to return to the scene of fantasy that enables you to expect that this time, nearness to this thing will help you or a world to become different in just the right way' (2011, 2). The optimism is cruel when the object, the person, the kind of life or body to which you have attached your desire of 'the good life', becomes the obstacle to reaching that life. Cruel optimism does not intend to highlight the irrationality of a desire, but rather to explain the persistence of a desire (Berlant 2010; 2011). In line with this, we do not aim to simply point out inconsistencies or irrational longings of the patients in our research, but to shed light on why patients might remain optimistic that they can gain the same level of functionality for their body as before the injury or illness, even though it might not happen—and in particular why the metaphor of the body-as-machine and its implications of fixability might actively contribute to a state of cruel optimism. With this theoretical lens, we can approach the patients' optimism and expectations for the future as a performative relation that orders and shapes the patients' present life—also if this optimism turns out to hold an element of the cruel. The 'cruel optimism' here is that the machine metaphor in medicine holds out the promise of fixability: if the body is understood as a machine, it can be fixed like a machine.

When discussing the notion of 'fixability' it is essential to also look to how disability scholars think about temporality, in the work from and with the perspective of people who have a disability or a chronic illness. Alison Kafer writes about the kinds of futures others imagine on your behalf, where a future with a disability is often 'disavowed' and not recognised, whereas a future without disability is seen as self-evident (Kafer 2013, 2). While disability has nuanced and multiple definitions, defining the specific orthopaedic patients in this study as disabled, would be looking away from the political and societal inequities that especially disability activists have been increasingly working to create awareness of. It is, however, interesting to use disability studies to look into how societies have physically, politically, economically, and on a normative level, been determined by the abled body, to accommodate the abled body (Kafer 2013, 6), and how this affects patients' expectations of how their own bodies need to function in the future to fit into the norms of society.

On the day of surgery, Andrea mainly seems to hold on to the metaphor of the body-as-machine, as she states how she is expecting that the pain will go away, and that she has seen what has caused the pain. The cruelty of cruel optimism is that the thing you are attached to in some ways also hurts you (Berlant 2011)—in this case, that holding on to the idea of fixability and a return to a past functional

level, might end up damaging your ability to move forward and find other ways of dealing with whatever ails you. Andrea has already suffered—in Berlant's framing—a temporary loss of her ability to be physically active at previous levels, but from Andrea's perspective, it is not a permanent loss. However, this insight is not very surprising, as patients go to hospitals to get well, and therefore hope for a future in which they have recovered. The notion of hope in the clinical space is well documented in medical humanities (Jensen 2016; Mattingly 2010). Andrea has also not expressed any concerns that a loss might come. During the fieldwork, it became very clear that many of the patients encountered in the surgical space return for a second or third surgery, suggesting a cycle of hope and disappointment. During the surgical encounter the space for hope and expectations is kept open, even as the cycles of not-being-fixed roll on. This is all glued together in part by optimism, as described by Berlant.

2.1. Living with 'brokenness': Mads in surgery

Before we return to Andrea and the outcome of her surgery as discussed in follow-up interviews, let us now look at one of the patients who have returned to the unit for a second orthopaedic surgery. Grytter observed the surgery of Mads, a male patient in his thirties. The surgery is his second shoulder surgery. During the first surgical intervention he had a cyst removed, but his shoulder is hurting again, so he is undergoing a second surgical intervention. The surgeon is performing arthroscopic surgery, where a small camera and surgical instruments are inserted via small incisions in the shoulder. The vision of the camera projects the inside of Mads' shoulder onto a screen in the operating theatre. This is mainly for the surgeon to view inside the patient's shoulder in order to perform the surgery. When circumstances allow, patients are offered the chance of staying awake during the surgery (see more on being awake in Grytter and Jensen 2023). Mads has chosen awake surgery, and is under regional anaesthesia. During the surgery he sits up right in the surgical chair and has a clear view of the screen projecting the inside of his shoulder. He is calm and silent most of the time, only asking a few questions, mainly about the surgical tools and instruments, as the surgeon explains what Mads sees on the screen. During the surgery, the surgeon concludes that the shoulder is frail and unstable and decides to insert an anchor to stabilise Mads' shoulder. The anchor is drilled into the bone, stabilising the shoulder with a wire system. Before this second operation, the surgeon was not certain exactly what had caused the pain after the first surgery, and in an interview shortly after his second surgery, Mads explained how he was curious to find out what had been wrong with the shoulder:

> It's always interesting what they find in there. And they found out that it wasn't the glenoid ligament, but the shoulder that was unstable. I think it was nice to find that out because I was awake [during the surgery]. That it wasn't the glenoid ligament, but the shoulder, which was loose in the joint, and now it's been fixed. Now that I've seen it with my own eyes, I have a better impression of what has happened.

It is clear from this quotation how Mads, during the second operation, has the impression that he has seen his injury—his unstable shoulder—being stabilised and fixed, that is, fully repaired. Again, the idea of a fixable body speaks to the body being repaired like a machine, with a straight linear recovery, even though this is his second surgery, and he has been through many years struggling with his shoulder. When his shoulder first started hurting in the summer of 2016 (3½ years prior to this second surgery), he was a self-employed sewer contractor with four employees. He explains how what he enjoyed most in his work was helping people, but with his shoulder injury he was not able to participate in the practical aspect of the work, so he decided to close his business:

> I had to let go of that, because I wasn't able to do that kind of physical work with my shoulder. This started in the summer of 2016, and I had surgery in the summer of 2017 with rehabilitation the rest of that year. At that point, I decided that I didn't want to be self-employed any longer. I terminated my employees' [contracts] and found a permanent position at an office (. . .). It was tough in the beginning to acknowledge how this company, my little child, that, well, I wouldn't be able to continue with it.

Due to the cyst, Mads had to completely change his professional path and life, and so the pain it caused had a severe impact on his everyday life, even after the surgery. When we first met Mads, his life had already been altered, and he was in a very different situation from Andrea. Before his second surgery, he had already undergone surgery that did not completely fix his shoulder and following that, the loss of his company and working life as he knew it. He appeared to have already let go the expectation of a fully repaired shoulder and a return to his former working life. Here Berlant's notion of cruel optimism seems to be playing out in a darker space, as Mads' loss—both bodily and professionally—has already happened, and his desire is not that for a past state of his body. Mads has altered his life and fitted his job situation to the current abilities of his bodily movement and motorial skills. This however does not alter the surgical situation becoming a place of optimism for the future.

In another article Grytter and Jensen (2023) argue that being awake and viewing inside your own body during elective orthopaedic surgery might give the patient an experience of proof of their pain, and provide an expectation of a linear recovery; that the injury or pain will be better in the future after the surgery, because the

patient has seen with their own eyes what has caused the pain—as Mads says in the first quotation, 'now it's been fixed', indicating that he has seen the instability of his shoulder being fixed. After his second surgery, Mads appears to be in an intermediate position. In the framework of cruel optimism, we might on one hand—as just stated—claim that he does not appear to have an expectation that his body can return to a prior state. He has already gone through a first surgery, which has not 'fixed' his shoulder, and he has altered his professional life in accordance with this. On the other hand, he appears to have an expectation that he has now seen how the shoulder was stabilised through the anchor and wiring, and he has a sense and optimism that his injury will now be fully repaired: it will be 'fixed'. In the surgical situation, Mads keeps the prospect of fixability alive, even though he knows from past experiences with surgery that it might not fix the injury. Let us now jump eighteen months ahead in time and look at whether the patients' expectations were fulfilled after their surgical intervention.

3. Changing metaphors: Patients' views of fixability after 1½ years

Neither Andrea nor Mads had further surgery when Grytter met them eighteen months after the initial encounter in the surgical space. Since surgery, Andrea had run two half-marathons, and was not experiencing pain in her foot anymore, but did that imply that her body was back to the same level of functionality as before injury? During the second interview she explained, 'I think I'm doing alright actually. I probably won't return to the same level [of running] that I had prior to the injury'. During the interview, Andrea was asked if she could remember whether she, when she had surgery, had an expectation of returning to the same level of running as before. She answered with the following rhetorical question:

> Return to my previous level of running? Return to my previous life? I definitely had (. . .) thought during the surgery that now I was having surgery, I was hoping to return to my former life. However, it's not the same. I know that aging is also just against you when we talk about sport performances, but just to be able to return to something [is positive].

Andrea is back to running, not on the same level as she was prior to the injury, but she seems to have come to terms with this. Her body has not returned to a prior state that—as she clearly expresses—she had expected, nor has her 'life' as she puts it. This expectation is in line with medical anthropologist Lenore Manderson's argument that most people have an internalised supposition that they will have a healthy and able body for most their lives, and as a result alterations to the functionality of the body might change patients' understandings of their own

identity (Manderson 2016, 29). Andrea has adapted her mode of running to fit her physical limits. Havi Carel also writes, ‘Adaptability in illness is a response to a change within one’s body’ (2012, 106). This statement seems to mirror how Andrea is shuffling onward rather than clinging to an expectation of a return to a past bodily state and life. Returning to cruel optimism, we might say that Andrea is no longer tied to the ‘cruel’ expectation that her body is fully fixable—she has come to accept that it will never be fully fixed, and that it has a functionality which is shaped by factors such as having had an injury and ageing. During the interviews we talk about to what extent a body can be fully fixed:

> I think we look different inside from the beginning, and then we get more different with age (. . .) It’s unavoidable, it’s like when moving into a new house, scratches will come with time. I think it [the body] is like a television or a computer. Sometimes you can change a chip, but other times there is just too much damage to the computer that there is nothing to do. We’re never going to be able to repair everything.

Andrea clearly draws on the body-as-machine metaphor in comparing the human body to a house, a computer, a television—but here the mechanical metaphor does not imply that a body or machine is fixable. Here a machine is something that with time receives damage and wear and tear to the point that it is beyond repair. Andrea’s description of the human body takes the machine metaphor out of the realm of the binary. In a sense, she is building an intermediate metaphor between mechanistic and processual or ecosystemic registers—the body as a machine that is continually in process. This reflects her way of coming to terms with a body that cannot be fully fixed anymore, and that maybe never could. It involves coming to terms both with her injury as well as the slow process of change over time. In the eighteen months from her surgery to the second interview, Andrea has clearly changed her expectation of her body: from being fixable to being to some degree broken, yet functioning; and a body that through the lived experience is shaped in relation to all the ‘scratches’ she encounters during a lived life. We see this movement reflected in the use of metaphors, as her body changes from being fixable to being described as a machine that works, even though it is beyond complete repair.

When Mads was interviewed eighteen months after his second surgery, he said he was doing worse with his shoulder than he had been after the first surgery. After the second surgery, he spent time rehabilitating his shoulder, but it did not work sufficiently, and he was about to start another rehabilitation process when COVID-19 came: ‘Then everything just shut down, and I must admit that I’ve given up on it. I don’t feel that it [his shoulder] is going to be better.’ Mads’ shoulder hurt when he did everyday things that were physically challenging such as mowing the lawn or jumping on a trampoline with his kids. He tackled this by taking painkillers for a

few days, until the pain was gone—then he forgot about it, until the shoulder started hurting again, the next time he did something physically challenging. Like Andrea, Mads' body was also to a degree broken; but as his body was still not functioning well in relation to the *tasks he wanted it to be able to perform*, his body stood out as being almost more broken than Andrea's. He was not comfortable with the pain he still experienced, while Andrea accepted her limitations. During the interview, we talked about the functions of the human body and his own body.

> Mads: The body is an amazing machine (. . .) It can digest our food, pump around blood, and breathe. An amazing machine. And it can to a large extent fix itself. If we cut ourselves open, then it closes by itself. If it can restore and fix itself, well then it must be an amazing machine.
>
> Grytter: Do you think the body can be a place that is completely fixed?
>
> Mads: Well, that would be an infant without any illness, completely unspoiled—nothing has happened to it. Then there's a body like mine that has been on the labour market—it's not completely undamaged. (. . .) When you're me, it will always be broken. A bit like an old worn car, it's dripping a bit of oil . . . it's certainly not 100% tiptop. I think it will happen to everyone with age. It'll be worn down, and at some point, you cannot keep fixing it.
>
> Grytter: Is it a hope for you that your body will heal completely?
>
> Mads: No, it's not a hope for me. It's not like I think my body will heal, it's more like I think it can heal up to a certain level, but there's also something it can't heal, and some illness it can't fight.

Mads clearly uses the body-as-machine metaphor to describe both the human body and his own body. It is both an old broken-down car that cannot be fixed and an 'amazing machine' because of its many functions from eating and pumping around blood, to fixing itself. Here the body as a system of complexity comes into being. The body might be able to heal a small wound, but there are kinds of illness that 'it cannot fight', ways of being broken that never go back to 'normal'. Mads also describes his own body as a place that is slowly disintegrating and is unfixable. He is having to face his body as 'faulty' or even 'broken down'. Comparisons of illness or the body to a 'tool' which is broken or not functioning have been made and discussed by several philosophers of medicine (Carel 2015; Svenaeus 2000). One of Carel's points is how, because the body is in fact not a mechanical tool but our medium by which we experience the world, it cannot be expected to be repaired like a tool; and therefore a 'malfunction' to the body becomes a way of being (Carel 2015). Another important point to shed light on, is how both Andrea and Mads mention ageing as an important factor when they talk about their body and its fixability. Mads mentions the infant body almost as the ideal starting-point in a continuum of health—from there the body is altered,

shaped, affected and essentially broken by factors such as age and physical work. Andrea also mentions ageing as a factor that has affected her ability to run. To both, age stands out as a factor that decreases their bodies' physical and functional abilities, just as their injuries have—likewise—limited what they can do with their body. The decreased functionality that comes with age, is the opposite of the biomedical linear narrative of a possibility of continuous improvement. The factor of ageing emphasises how a status of the body is always relational and processual.

Conclusion

Venturing into the field of elective orthopaedic surgery in Denmark, we have seen how this large medical field is suffused with visions and descriptions of the body as a machine, and how this metaphor might be inadequate to fully capture the experiences of patients, and might even be said to be unhelpful in the process of finding new ways to move with and beyond injury and the surgical encounter. Through its framing of the body in mechanical terms, the machine metaphor holds out the promise of fixability, of a complete restoration of previous functionality through the surgical intervention, even as both surgeons and patients must deal with a much messier biological reality and lived experience.

In the first part of the analysis, we saw how surgeons are very aware of both the body as a biologically complex systemic place, and the body-as-machine. However, they tend to divide the two different kinds of approaches to the body, the approach to the body-as-machine being very strong in orthopaedic surgery. In the isolated framework of a specific injury, it seems useful to bring mechanical metaphors into the orthopaedic practice. But if we pay closer attention to the lived life of patients and their various injuries, we find the mechanical metaphors run the risk of giving the patient a misguided impression of what to expect from the surgery and their recovery. For both patients we follow here, Andrea and Mads, we see how their experiences with living their life in accordance with their injuries and the outcomes of their surgery modulate their expectations of their respective bodies, and how this might be reflected in the metaphors they use to describe their bodies.

Bleakley suggested a transformation or reconfiguration from machine metaphors of the body to ecological metaphors, as it would be more beneficial for patients to understand the biological complexity of their body, rather than likening it to a car needing a change of oil. In this article, we show how patients change their expectations of their bodies' ability to be repaired, to be fixed. The body changes from being 'fixable' to being in a state of brokenness—yet simultaneously also in a state of process, transition, and relation. Patients adapt their life to fit the

limitations of their body—Andrea runs, but not as far as she used to, and Mads forgets about his shoulder and its limitations, until he does something that hurts and then he takes painkillers until the pain disappears again. Eighteen months after their last surgeries, neither Mads nor Andrea have any expectation that their body or life will return to what it was prior to their injuries, as they did immediately after their surgeries. The patients have changed their understandings of their body, with the isolated injury working almost as a catalyst for a change to the understanding of what their body is. When patients experience how even an apparently straightforward part of the body cannot be fixed, the body becomes more complex than first assumed—it becomes an entity that is in process, and that changes in relation to time, age, everyday life and labour. When we approach the human body through an affective theoretical perspective, it sheds light on the body as a phenomenon which does not 'just add up' (Stewart 2007). This gives us an opportunity to understand how patients come to understand their bodies as a place in ongoing process, and not in a static position as a concept that fully adds up. This again helps us to move beyond a rigid set of metaphorical ideal types like body-as-machine or body-as-ecosystem, as outlined by Bleakley, and helps us approach the body as always moulded around the particularities of the person and their lived life. We saw how especially the understanding of the body-as-machine changes, in different contexts and to individuals over time—so, while the patient's body might still be understood and articulated in machinic metaphors, the conceptual sense of what the body-as-machine is, is changed, tempered by qualities associated with ecosystems and processes.

Thinking of machine metaphors in the context of orthopaedic surgery shows the necessity of nuancing the sort of machine that is implied and presupposed. We have seen how the body-as-machine might not be very beneficial for patients after their surgery, as it might provide a misguided understanding of the body as a place that can be completely fixed or reach a kind of ideal status of health, when in fact the body is never ontologically standing still. The mechanical metaphor, however, remains relevant within the orthopaedic space, as it describes the isolated injury and mechanisms of a particular, discreet part of the body—and thereby resonating in a more immediate way with patients, who still carry these metaphors with them. Thus, we would argue that the point becomes less to aim at a wholesale shift from mechanic to ecological or systemic metaphors, if such a thing was possible, but rather to practise ways of softening and contextualising machinic metaphors with ecosystemic or processual ones. By thinking and speaking in more embodied, more lived and more temporal ways, the patients—and the surgeons—might come to find more space in the metaphorical landscape that surrounds the body in orthopaedic surgery and beyond.

Authorship statement

Grytter has conducted the fieldwork which grounds this article and collected all qualitative data as part of her PhD project. This article is co-written with both Grytter and Bencard contributing to the Introduction, Part 1, Part 2, Part 3, and the conclusion, while Grytter wrote the section on field study and methodology. Both authors have read the final version before submission to MAT.

Ethics statement

Our research follows the rules of GDPR and the Danish Data Protection Agency. By Danish law, a qualitative study like this, with no patient records or biological samples, does not need approval from the Scientific Committee of Ethics. All participants in the study have been informed by the content of the study and have signed an informed consent before each interview. All participants have been interviewed twice, and during the second interview had the possibility to comment and qualify findings and claims in this study.

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