Chapter 16

Playing at doctors and nurses: technology, play and medical simulation

Caroline Pelletier and Roger Kneebone

Abstract (75-100 words)

Please add your abstract here – edited to 75-100 words

In this chapter we discuss how concepts of play and interactive story-telling can be used to make sense of simulation-based clinical education. We argue that role-playing clinical situations affects how such situations can be made sense of, because they are shaped by contemporary narrative conventions for the representation of bodily injury, and by the emotional pleasures fulfilled by mimicry and pretense. The argument has implications for interpreting the educational and ethical significance of digital, simulation technologies for representing the body, and for interpreting how such technologies introduce novel social practices – notably play – into existing institutional settings.

Index keywords (15 max)

Please insert your index keywords here

Keywords: simulation, clinical education, play, mimicry, role-play, narrative, immersion, virtual reality

Faith, bodies and simulation

Simulation is increasingly used for work-based clinical education. In many teaching hospitals, surgery is practised with screens that render computer-generated graphics of bodily organs; psychiatric consultations are rehearsed with interactive videos; obstetric emergencies are prepared for by delivering plastic babies from plastic birth canals. The popularity of simulation as a pedagogic modality follows from several developments in healthcare, including changing ethical norms about patient safety, shorter in-patient stays, and new technologies for representing the body.

In the clinical literature, researchers commonly classify simulation in terms of its degree of faithfulness, or 'fidelity'. For example, in Cant and Copper's (2010: 4) typology of simulation-based learning, 'high-fidelity' simulation means 'simulation that incorporates a computerised full-body manikin that can be programmed to provide realistic physiological response to student actions', whereas a 'low-fidelity' simulator 'replicates' only a small part of the body, such as the reproductive system. The term fidelity does not just describe how much of the body is represented, however, but more specifically how faithful the representation is. Various epistemological commitments therefore give the term fidelity meaning: there is a measurable and ontological gap between reality and its symbolisation; reality is 'out there' independently of embodied perception; reality, and realism, are singular phenomena, subject to consensus, on the basis of scientific methods of measurement. The term fidelity also implies that the copy does not interfere with the original referent: it merely reproduces fragments of it, without recourse to mediation or rhetoric. Simulation is thus figured as mirror-like, with varying degrees of telescopic power.

Use of the term fidelity however leaves many aspects of medical simulation unaccounted for. One example makes the point we wish to develop in this chapter.

Figure 16.1 shows portraits of two manikins. The clinical practitioners who teach with them describe each respectively as 'high-fidelity'. Yet one can see important differences between them: one has an imperturbable, perfectly-toothed rictus, the other has a fixed if wrinkled jaw, and sports a fashionable scarf and jumper. They look very different, but both are called high-fidelity. How can this be?

Figure 16.1 ABOUT HERE:

Caption to read: *On the left, a high-fidelity manikin in bed, and, on the right, a high-fidelity manikin with face mask, wig and scarf*

Answering this involves examining how each manikin is used in teaching. The one on the left is used to teach airway management in a simulation centre run by an anaesthetist. The one on the right lies on a bed in a simulation centre run by a nurse, and is used to teach communication. The toothy rictus allows trainees to practise inserting a tube through the mouth without pushing down

hard, and breaking the front teeth. The wrinkles, on the other hand, are indicative of age, and the clothes of gender, features that are influential in the way communication is performed. The manikins' attributes are thus faithful to distinctive ways of interacting with the body. These ways of knowing are to some extent exclusive: inserting a tube into someone's mouth stymies verbal repartee, just as an unarticulated closed jaw hinders access to the airway. The manikins thus reflect and re-inscribe not only distinct professional practices – anaesthesia and nursing respectively - but also the division of labour from which they arise. These divisions are characteristic of large, multi-professional teaching hospitals organised on the basis of highly differentiated clinical specialisms, as found primarily in Europe and the US.

The social construction of simulation

The example tells us something about what sustains faith in medical simulation and simulators. It indicates that simulators do not so much replicate an ontologically given reality as promote particular and embodied ways of interpreting, experiencing, effecting and participating in it. The word 'it' in the previous sentence is of course problematic, since the example is indicative of the multiple realities of the body (Mol, 2002): the very different appearances of high-fidelity simulators make the case that the body – even the clinical body (Foucault, 1963) - is not a singular entity, whose contours and behaviour are subject to clinical consensus. The body's presences emerge within practices for knowing, acting, and feeling (Johnson, 2008). This argument puts into question efforts to measure the gap between an originating reality and a forged reference: measured in simulation research, it is incommensurable in simulation-based educational practice.

This reading of the two manikins is convincing on the basis of a different set of epistemological commitments. These might be crudely labelled as the precepts of the scientific philosophy of social constructivism, by contrast to positivism, and which emphasise the way in which reality is not an independent entity distinct from the practices for knowing it, but rather emergent within those practices; not so much thing as experience participated in, mediated by the conventions of a social group for its symbolisation. When examined through the lens of social constructivism, questions arise which are rarely addressed in clinical research literature: whose practices for knowing the body are reified and taught in simulation-based education; and whose are discarded? Which ways for touching, manipulating and observing the body are made possible, and which are made impossible? Which divisions of labour for acting on/through/with the body are reinforced and which undone or reconfigured? Such questions highlight the ideological character of simulation.

To say that medical technologies do not simply reflect progressively growing knowledge of the body but rather re-constitute it is hardly news in the medical humanities or medical sociology. These fields focus on how medical objects of knowledge are historically and culturally situated. However, studies on simulation in the medical humanities have tended to focus on how simulators reify and re-organise *clinical* practices – not simulation practices. In effect, this means that whilst healthcare is historicised, simulation techniques and technologies are not. So, whilst attention has been paid to the ways in which simulators make clinical practices plastic, little attention has been paid to the ways in which simulation (and not just simulators) draws on historical and cultural practices of mimicry and dramatization (as exceptions, see Taylor, 2011; McNaughton, 2012).

This leaves aspects of medical simulation unaccounted for, including the narrative conventions according to which a simulation scenario (and not simply the manikin as its main prop) appears credible or not; the dramatic conventions for 'realistically' play-acting a scenario's characters; and the pleasures and emotions generated in acting out clinical practice. It is on these aspects of medical simulation that we would like to focus in the remainder of this chapter. The conceptual lens through which we do this is *play*, the argument being that medical simulation, including simulators, promotes distinctive play and play-acting practices – not just professional practices; and that simulation appears realistic according to dramatic conventions, and not simply professional norms. This shift from a concern with simulators to one with simulation implies a shift from the study of objects to the genres of activity within which they are embedded and symbolised.

The research study

The substance of this chapter is based on a research project, carried out under the auspices of Professor Roger Kneebone's research programme on clinical simulation. Over a 10-month period (Jan-Oct 2012), Caroline attended 30 half or whole day 'high-fidelity simulation' courses. The other participants were trainee doctors (6-12 of them), sometimes also with nurses and other health professionals, and clinical educators (4-6 of them), who were senior nurses and doctors. Courses had three parts. First, lectures about a course's purpose. Second, a sequence of scenarios (between 2 and 6), lasting approximately 15 minutes, and in which 1-2 trainees acted out a clinical situation. For example, a trainee might be told 'Mrs Smith has been brought into A&E by her sister. She is complaining of stomach pain, and you are the first doctor to examine her', and

then sent into the simulation room to respond to the various prompts given by educators from the control room, including outputs from the high-fidelity manikin. Prompts were also given by 'plants' playing the role of nurse, consultant or relative. Third, and following each scenario, a 'de-briefing', lasting between 20 and 45 minutes, in which educators and all the trainees discussed the scenario. Scenarios were observed by trainees in the de-briefing room via an audio-visual feed consisting of multiple camera angles. Caroline was often given this feed and the analysis below is based on this, as well as field notes.

It was during field note coding that we considered the analytic benefits of the concept of play, since this allowed us to account for under-reported phenomena in the published literature, including the cooperative work involved in maintaining a pretense. Treating medical simulation as play does not mean treating it as idleness or triviality, but rather as an activity implicated in symbolising the world and, consequently, in experimenting with how it can be made sense of.

Play and phantasmagoria

A leading researcher in the field of play, Brian Sutton-Smith (1997), describes the different ways in which phenomena are classified as play. In education, he argues, phenomena are classified as play when they are seen as progressive and developmental, leading eventually to the development of various kinds of capacities, such as language development, team-working, and so on. This rhetoric of 'play as progress', as Sutton-Smith calls it, is identifiable in many accounts of medical simulation (for example, Alinier, 2008).

Sutton-Smith's (1997) analysis however provides rhetorical alternatives for interpreting play phenomena. His account of the rhetoric of play as primarily an imaginative – rather than developmental – phenomenon makes play sensible on a different basis:

> We are eternally making over the world in our minds, and much of it is fantasy. The difference is that while children have toys, adults usually have images, words, music and daydreams, which perform the same function as toys. *Our fantasies are the microworlds of inner life that all of us manipulate in our own way to come to terms with feelings, conflicts, realities, and aspirations as they enter into our lives.* Children and adults may not really be so different in their use of fantasy play...*Play is not based primarily on a representation of everyday real events - as many prior investigators have supposed - so much as it is based on a fantasy of emotional events*. (156 – our italics)

Within this rhetoric, play is understood to be motivated by feelings rather than images of reality. It is an emotionally vivid experience, which allows the limits imposed by normal or non-play reality to be transcended; mocked as much as mimicked. Rather than representing the world, play deconstructs it, taking it apart in order to suit players' emotional responses to events.

If we use this rhetoric to examine our field data, we see phenomena that are rarely accounted for in the research literature. For example, educators did not simply 'represent' reality: they pretended to be violent drunk patients, anxious and unreasoning relatives, and confused, demented old ladies. These parts were often played with relish: great pleasure appeared to be taken in acting outrageously at work, for instance, in a nurse's pretense of a drunk patient

shouting expletives, or a doctor's enactment of an irresponsibly dismissive attitude. Such enjoyment – absent from functional accounts of simulation-based medical education - might be understood as an instance of the carnivalesque (Bakhtin, 1984), in which the sobriety of normal life is overturned and social functions temporarily exchanged.

Acting in the role of a profession and grade involved displaying its identifying characteristics, not just in terms of dress but also behaviour. Consultants were played invariably as decisive and concise, and nurses, by contrast, as either friendly or stubbornly bureaucratic, attributes that arguably reflect feelings towards those professions rather than data on their 'real' behaviour.

This 'emotionally vivid' role playing – to use Sutton-Smith's phrase - often provoked laughter in control rooms:

> In the control room, John answers the phone, playing the role of a consultant. In a strong Scottish accent he says: 'Hamish McTaggart by name...' The other educators in the control room laugh loudly. John then enters the simulation suite. Lindsey, the trainee, says to him 'Hi John'. He responds in a heavy Australian accent: 'I'm Shane'.
>
> [Field notes]

The parody of accents and professional traits was mirrored in the exaggeration of symptoms. Educators explained this in terms of the importance of teaching trainees how to manage clinical situations: it was imperative, then, that trainees recognise a situation as pertinent to clinical

knowledge. A scenario was deemed a failure if a trainee did not identify the clinical condition, or if the scenario did not make it sufficiently visible. For example, the following field note was made during one scenario in which a trainee had failed to identify symptoms manifested by the manikin:

> John asks the technician to increase the settings on the manikin, so that the heart rate falls even more quickly. He then turns to me and says: "well, you have got to make it obvious what is going on, otherwise they just don't know".
>
> [Field notes]

Symptoms and conditions therefore appeared heightened and exaggerated. This same phenomenon was evoked by trainees in terms of the speed with which time passed during a scenario, with patients apparently deteriorating much more quickly than in 'real life'.

This urgency, and the excitement and anxiety it generated, contrasts with how some trainees represented their everyday work in discussions:

> During the coffee break, Susan, a trainee, says to another trainee standing next to her: 'In my hospital, there isn't a cannula on the whole ward. None of the equipment works. The seniors aren't at all interested in your situation. But I guess there would be no point in simulating this, as *what we want* to learn is the clinical stuff'.
>
> [Field notes]

The italics here highlight the expression of desire - "what we want to learn is the clinical stuff" – which illustrates Sutton-Smith's point that play is performed "to come to terms with feelings, conflicts, realities, and aspirations as they enter into our lives". The purpose of a course, and the principle according to which aspects of reality were treated as 'simulatable', was – in Susan's words here – the expression of a wish: of learning 'clinical stuff'; of doing meaningful, satisfying, effective work. It follows that what was *not* simulated were the dissatisfying, intractable, limiting aspects of life in hospital.

This point is vividly illustrated by the conventions of the DNAR scenarios (Do Not Attempt Resuscitation) we observed. This scenario was described by educators as teaching how to break bad news, specifically how to tell a relative that a DNAR order has been issued on a patient. In hospitals, such orders are issued when a resuscitation attempt is judged likely to be unsuccessful, for instance with very frail patients.

In all observed instances of this scenario, the person who had played the role of the relative was asked, in the de-briefing, to respond in character. The extract below gives one example:

Faculty member [to Julian, who played the relative]	You were the son. Very good acting skills, I must say. As a son, getting the information from her, how did that make you feel?
Julian	*I was reassured*, that I was put in a space,

> that *I wasn't lied to*, at any point, *I was always given the right information* for that time […]because I was clearly anxious, you didn't say, we aren't going to resuscitate your mother. *You actually did it in a very skilled way* and so there wasn't anywhere where I could suddenly, you know, go *ballistic*, because this hadn't been discussed with me, and I thought *that was very well done* actually.
>
> [Video transcript]

The educator's/son's response here illustrates an account of fantasy described by Zizek (1999), in which a situation is perceived from an impossible perspective – or gaze, in Zizek's Lacanian terminology. It is impossible in that the educator/son perceives it from two perspectives simultaneously: as the son who is 'reassured' and not 'ballistic'; and as the educator who knows that he 'wasn't lied to', that he was 'always given the right information', and that the trainee's performance was 'skilled'. Zizek's argument is that impossible gazes are evoked to declare how a situation should be felt, rather than simply how it *is* (this '*is*' is precisely impossible). Julian tells the trainee he did well in informing the relative of the DNAR order. This telling is attributed to the relative. It is thus the relative's voice that speaks to the trainee, saying he did well in breaking the news that his mother was going to be allowed to die, an impossible, or fantasised, recognition of skill that avoids any potential distress.

Studying medical simulation as an imaginative activity, imbued with phantasmagoria, is suggestive of how realism is a consequence of the imaginative work of participants – work enabled by practices of acting and pretending, dressing up and mimicry. Rendering this imaginative work visible has many implications. It implies that medical simulation does not appear realistic by virtue of its simulators' fidelity, but rather by the meaningfulness of the practices they facilitate. This has resource implications: in the centres we observed, expenditure had been dedicated to purchasing simulators, with the resources available for other costs, including staffing, highly restricted. Since it is educators who sustain a course's imaginary work, this funding distribution appears problematic – more significantly so, arguably, than the shortcomings of the simulators, which are the focus of much clinical literature.

If high-fidelity simulation is meaningful *because* of its emotional vividness, its educational rationale is also affected. It need no longer be accountable solely in terms of developing skills, and apologetic about its simplification of medical work. Rather, there is then scope to explore how it can sustain the deconstruction and analysis of medicine as an emotional practice. Medical simulation can consequently be imagined as a resource with which to explore and manipulate the pains and pleasures of work, its failures and frustrations, working through them to develop better responses to its tribulations. Rather than simulation acting only as an ante room to the hospital workplace, it can then also be imagined as a space in which the emotional experience of medical work is manipulable, and thus transformable in ways that go beyond the transfer of skills, to touch on the meaning of those skills for the experience and quality of work.

Play and narrative

When simulation is treated as a realistic setting in which to rehearse skills, a scenario is defined as the domain of knowledge to be learned about. In the clinical literature, Dieckmann et al (2012) thus refer to a scenario as a patient case. Gaba et al (2001: 181) describe scenarios as "sets of underlying diseases and […] challenging problems to solve". In our research sites, a scenario was referred to in terms of the clinical condition to be taught: there was the anaphylaxis scenario, the upper GI bleeding scenario, the DNAR scenario, and so on.

Treating scenarios as cases or diseases does not foreground their narrative structure: the way they tell a story. Yet acting out a case means organizing a sequence of events narratively. For example, establishing a case on which a doctor can act to effect necessitates describing how it arose; which events it comprises – such as a falling blood pressure - and the order in which they take place; how long these events last; how they are linked causally. In our research sites, trainees were always given a background story before they entered the simulation room, precisely to enable them to act realistically. The story indicated who they were in the scenario, information about the prospective patient, and the chronology they were entering (e.g. the nurse has examined him and is calling you in to help). These elements – events organised into a causative chronology - are essential components of narrative (Ip, 2011). If we examine scenarios as narrative forms, we notice that this does not simply contextualise the content to be taught. Instead, it determines what that content means.

We will initially draw on the work of Jacobs (2003) to illustrate this point. Jacobs describes the rise of a genre of medical TV drama in the 1990s called 'body trauma', in which trauma is the

primary plot device. Whereas earlier medical dramas staged the power of medical science to cure the ills of society (*Dr Kildare*) or mapped the social anxieties of the baby boom generation onto the body (*MASH*), more recent shows (*ER)* make the body's visceral injury the cause of a narrative's dramatic events.

This generic trait characterised the scenarios we observed, in which the cause of events was the body's sudden deterioration. Acute symptoms were thus the starting point of narrative development: a sudden fall in blood pressure, the lack of a pulse, the cessation of respiration. Death was invariably imminent, with medical intervention framed as an act that stabilised the body. The hospital thereby appeared as the front line in the fight against tragedy; a war zone, rather than a place of healing. Educators explained this emphasis on emergencies in terms of teaching the management of crises, with some adding that it also made for an exciting training day.

Jacobs quotes Michael Fitzpatrick (12) on the ideological significance of body trauma: "once you give up on any prospect of achieving progress in society, your horizons are reduced to securing your own physical survival". In other words, dramatizations of medicine that focus on the sudden contingencies of the body detach the appearance of illness and disease from the wider context of the patient's life. In the body trauma genre, doctors are positioned in particular ways, making highly visible the power of doctor-heroes over life and death (Gordon et al, 1998). This dramatisation of disease, and of the social function of doctors, has implications for understanding the effectivity of clinical work: what it pertains to and what it does not, what a clinical case is and what it is not.

Jacobs' work on the genre of the medical TV drama is helpful in understanding how 'body trauma' can signify a realistic portrayal of medical practice. It is how medical practice is commonly dramatised and acted out – in other words, it is not that body trauma *is* realistic as such, but that it signifies realism in a particular cultural context. The prevalence of body trauma on TV as well as in medical simulation centres is suggestive of the role which TV dramas have in mediating the significance of medicine: one might hypothesise that in designing scenarios, clinicians made sense of their professional practice not simply in terms of their professional history, but also and inextricable from this, from its dramatic representation in a widespread medium.

Because Jacobs focuses on the TV medical drama, he does not facilitate an exploration of the significance of interactivity and improvisation in simulation scenarios. Murray's (1997) work on videogames is helpful here. She states that immersion is a function of fantasy: we create belief, rather than suspend disbelief. Fiction/play is immersive when intelligence is applied to reinforce rather than question the reality of the experience. Immersion does not pertain to losing sight of the real world, then, but rather to the creative and willing negotiation between the two: "sharing an unscripted fantasy environment with other people entails a constant negotiation of the story line and also of the boundary between the consensual hallucination and the actual world" (112).

This emphasis on negotiation highlights the importance of a practice we observed called 'meet the manikin'. It involved educators teaching trainees how to interpret the simulation environment:

> Geraldine takes the trainees into the simulation room and points out where equipment is stored, where the cameras and microphones are, and how the manikin works. She lifts its arm to show that it already has a cannula attached to it. She says this is because the manikin is too expensive to be replaced as a result of the wear and tear of frequent injections. She says 'if he's not meant to have a cannula in, I'll just cover his arm with his bedsheets. I'll tell you if he's sweaty or clammy. You can inject him and it goes into a bucket underneath, so don't kick the bucket'.
>
> [Field notes]

The 'meet the manikin' practice sets out the semiotic conventions specific to the simulation room: if the patient's arm is covered by bedsheets, this means he doesn't have a cannula in. Not only is the role of imagination highlighted again here, but also the necessity of accepting distinctive semiotics to have faith in a simulation.

This is significant because it means that immersion is undermined not so much by lack of realism (e.g a patient who arrives in hospital with a cannula) as by a rejection of its semiotics. This point can be illustrated in reference to a pattern identifiable in de-briefing transcripts: when the performance of a trainee was evaluated poorly (a judgment almost exclusively carried out by trainees on themselves), s/he also named differences between the 'real world' and the simulation. For example, one trainee explained his failure to treat anaphylaxis correctly as follows:

> I think in real life it would be more obvious if someone was having an anaphylactic reaction, so you could get a bit more certainty.
>
> [video transcript]

This pattern raises a question about the usefulness of simulation to teach about medical error or individual poor performance – a key component of the ethical case for simulation in much of the clinical literature (Ziv et al 2003). If doubt is raised about the semiotics of the simulation, so doubt will also be raised about the identification of error. Several researchers have already noted the difficulty of identifying errors on simulation courses (Dieckmann et al, 2012; Rudolph et al, 2007). They treat this as a problem of de-briefing technique. It may however be more effectively considered and then addressed by treating it as a function of immersion in fictional narratives.

Narrative analyses account for the way in which representations of reality appear realistic. This problematises the treatment of realism as a quality of unmediated reality, and points instead to the role of cultural frameworks of interpretation/imagination, by means of which the real becomes sensible. This argument was in fact widely accepted in practice (if not in theory) in our research settings, in which nurses and surgeons identified the way manikins, and the scenarios they facilitated, represented medicine primarily from the perspective of anesthetic professional practice: as a site of anesthetic action, marginalising the actions of other professions – as surgeons often complained.

Focusing on the narrative conventions of scenarios enables novel questions to be raised: What/whose forms of action and agency does its narrative structure enable and disable? Who is

made hero and who has the walk-on part? Discussing such questions explicitly with trainees offers opportunities for exploring the attachments of different professions and grades to versions of medical realities and the scope for action within these, and therefore to clarifying where and why such versions do not cohere. It also seems important to making explicit how medical professions construct the world to make it into the dramatic backdrop of their heroic actions.

Medical simulation as play: phantasmagoria and narrative drama

This chapter is intended to show how simulation-based medical education can be considered a form of play. Such a treatment is important in making visible the importance of imagination, fantasy and dramatic conventions in maintaining the credibility of simulation. What turns a plastic manikin into a patient on the verge of death, or body trauma into a justification for medical intervention, is not fidelity to a hypothesised real, but rather fidelity to a set of values and cultural imaginaries. This has implications for educational practices, pointing to the value of moving away from concerns with the fidelity of technologies, towards exploring the aesthetic and ethical practices of which they are a part. A concern with play also highlights the affectivity of clinical practice, including how fidelity to its sense of purpose is sustained and disturbed, notably by the presence of medical error and the dissatisfactions of organizational life.

The chapter also speaks to the contemporary literature on play, notably the field of simulation and game studies. Much of this focuses on technologies and practices which are identified as play by their users or participants, but often neglects to explore forms of play which might not be named as such, or, perhaps worse still, banishes these to the intellectually stultifying field of ‘serious games’. For example, Ian Bogost (2007: 57) a leading researcher in the field of game

studies, characterises 'serious games' as follows: "Educational games translate existing pedagogical goals into videogame form;…health games provide doctors and medical institutions with videogame-based tools to accomplish their existing needs". We would suggest that educational simulations, including ones in medicine, do not simply translate existing needs into a new genre of performance, but rather that such needs and the aesthetics of the form emerge in tandem, re-shaping one another, and thereby making original meanings possible.

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