

Collaborations between surgery and puppetry: Rachel Warr

Interviewed by Cariad Astles (Royal Central School of Speech and Drama/University of Exeter)

The text below arose from an interview with Rachel Warr of Dotted Line Theatre. Rachel has been working with surgeons over several years as part of an interdisciplinary collaboration on a fascinating project which links puppetry skills to those of the surgeon. The project is ongoing and it is expected that some fascinating research will arise as a result of this collaboration.

Cariad Astles: Could you talk about the project that you have been working on where you have been using puppetry in relation to health?

Rachel Warr: This is a brief summary from a personal perspective. I am a puppetry director and dramaturg, based in the UK. For the past six years I have been collaborating with medical professionals, principally surgical teams, but also general practitioners.

The disciplines of medicine and puppetry may appear distant, but if one focuses on the skillsets clinicians and puppeteers require, there are striking similarities. On many occasions I have observed skills applied during medical simulations which have seemed familiar to those I use in puppetry work.

My long-term collaborator is Roger Kneebone, Professor of Surgical Education and Engagement Science at Imperial College London, 2012 Wellcome Trust Engagement Fellow, and Professor of Anatomy at Royal Academy of Arts. Roger has worked as a surgeon, a GP and academic. <https://www.imperial.ac.uk/people/r.kneebone>. A guiding principle of his work is that that by looking outwards one can look inwards with new perspective. I would like to take this opportunity to thank Roger for sharing his curiosity and knowledge.

During these collaborations, I have been asked to: participate in cross-discipline exchanges of skills, provide training sessions for medical staff using puppetry techniques, co-devise surgical simulation exercises, co-lead outreach work for young people considering a career in medicine and be a guest speaker at public events.

The work has taken place through a variety of UK organisations including: Imperial College London, The Wellcome Trust, St Mary's Hospital, Chelsea and Westminster

Hospital, University College Hospital London, The Royal Free Hospital, St Thomas' Hospital and The Clod Ensemble, Victoria & Albert Museum, BBC Radio 3, Greenman Festival Science Tent, The Art Workers Guild and Gresham College.

CA: Could you talk about puppetry skills and what these bring to the work of surgery in particular?

Open surgery and puppetry inspired by Bunraku technique:

Parallels can be drawn between the skills required by surgical teams working in open surgery and puppetry teams working with techniques influenced by Bunraku. A direct comparison can be made between the leadership structures both employ, right down to a correspondence across individuals' roles and responsibilities. These teams stand in a similar configuration (sometimes needing to maintain awkward physical positions). They share a gaze, principally on their subject (the patient or puppet). Consequently, the lack of maintained eye contact between the team necessitates a need to communicate through nuances of movement and rhythm. Both teams are guided by changes in the pace of breath of the subject. There is a learned choreography in how the team operates, but there is also improvisation, as they sense and respond in the moment to the developing situation.

Over the past decade, surgical teams in the UK have moved from working in fixed teams to working in transient teams. This is similar to the application of Bunraku-inspired puppetry in Western theatre, where puppeteers are employed on a project basis and are expected to work with different colleagues at each new production.

Laparoscopic surgery and long rod puppetry:

There are also close parallels between the skills required for laparoscopic (keyhole) surgery and long rod puppetry. In both instances, practitioners are operating at a distance via rods, often with a simple trigger mechanism in the handle of the rod. In both there is a loss of haptic sense (compared to the direct contact of open surgery or Bunraku influenced technique).

The comparison is particularly apparent with puppetry performed to camera where the puppeteer's gaze shifts to a monitor, as it is in laparoscopic surgery where the surgical team's gaze shifts from the patient's actual body to the monitor showing images relayed from the camera inside the patient's body. Interpreting 3D movement on a 2D screen is an important skill in both instances.

Those working in laparoscopic surgery and long rod puppetry face similar strain and tension in the lower arms, wrists, shoulders and back, as these tools place a limitation on arm movement and an emphasis on certain muscles.

Handling tools, instruments and objects:

There is a great deal of object handling in the fields of medicine and puppetry. Practitioners from both disciplines require great dexterity and fine motor skills. We have spent time exploring how the different approaches of our training prepares the hands to manage objects effectively and the protocols and technique we each employ when needing to seamlessly pass an object between colleagues.

Suture, string marionettes and the management of threads:

Thread Management was the title of a series of practical sessions sharing the expertise of practitioners working with threads or strings. This included heart, vascular and paediatric surgeons, a lace maker, marionette makers and performers, textile artists and a fly fisherman. Knowledge shared included techniques for tying knots, (including with one hand while working at depth with no visual reference, be it during an operation on a premature baby with delicate suture needed inside the body, or tying internal strings within a marionette), sensing and control thread at distance, the nuisances of slack, taut or snagging thread and the properties of different kinds of threads.

The design of human-centred robotics for surgery:

This work has led to some poignant discussions about robotics for surgery and puppet design with George Mylonas, who leads the HARMS Lab (Human-Centred Automation, Robotics and Monitoring for Surgery), Imperial College, London. George has been

developing a prototype of a robotic tool for bimanual single-access and natural-orifice endoscopic surgery, called CYCLOPS. The inspiration for the engineering of the movement came from watching a puppeteer perform with a string marionette. CYCLOPS' movement is effected by a configuration of strings.

These reciprocal exchanges of expertise have been beneficial to those from both disciplines, providing practitioners with greater insight and a wider pool of techniques to draw from.

CA: Could you provide some links or reading for this extremely exciting work?

RW: Please see below:

The Myth of the Lone Heroic Surgeon

Gresham College Lecture, 2019

<https://www.gresham.ac.uk/lectures-and-events/lone-heroic-surgeon>

Thread Management

<https://vimeo.com/123221514>

Performing Surgery

Frontiers in Psychology, 2017

<https://www.frontiersin.org/articles/10.3389/fpsyg.2016.01233/full>

Rachel Warr

Rachel Warr is a theatre director and dramaturg from the UK. She specialises in puppetry, including rod, shadow, light, strings, glove and object. Her productions have been presented in the UK, Singapore, Turkey, Czech Republic, France, Romania and Canada. Her work has been nominated for a Total Theatre Award and won a Royal Television Society Craft and Design Award. She is the Artistic Director of Dotted Line Theatre, a Research Fellow at the V&A Museum's Research Institute, and Performer in Residence at the Centre for Performance Science. Rachel works on several cross-discipline research projects with surgical teams, scientists, a magician and product designers.

<https://www.facebook.com/dottedlinetheatre>,

<https://performancescience.ac.uk/team/warr/>,

<https://www.vam.ac.uk/research/projects/vari-encounters-on-the-shop-floor>.

Cariad Astles

Cariad Astles is Course Leader for the BA Puppetry at the Royal Central School of Speech and Drama and is also Lecturer in Drama at the University of Exeter, UK. She is President of the Research Commission for the international puppetry association, the *Union Internationale de la Marionnette*.

Cariad specialises in training, researching, performing and directing for puppet theatre; in objects and puppets within healthcare and applied settings and in the puppet as marker of political and cultural identity. She frequently runs training workshops in the UK and overseas, most recently in China, Chile, Australia, Germany, France and Spain.