



Anatomical Bodies: Plastinated Prosections in Anatomy Education

Julie Palmer & Frances Griffiths
Warwick Medical School, University of Warwick
April 13th – 14th 2010

Biomedical Visualisations and Society

- To critically explore the social and political implications of biomedical visualisation
- To gain technical knowledge of visualisation
- To foster collaboration and networking between early-career researchers



Plastination

- Embalming and anatomical dissection
 - Replacement of fat and water with acetone
 - Acetone replaced with polymers: 'forced vacuum impregnation'
 - Positioning
 - Curing (hardening)
 - A whole body plastinate can take 1500 hours and one year to complete
 - Also 'sheet plastination'
- Description of process from Body Worlds website:
http://www.bodyworlds.com/en/plastination/method_plastination.html
(Accessed 18 March 2010)

Visualisation?

- ‘From a medical perspective, plastination is one of the many techniques of visual representation of the body’ (Hirschauer 2006: 27)
- ‘Anatomical body’ (among multiple bodies [Mol])
- Surgical view of the body
 - ‘they show what a scalpel can “show”’ (Hirschauer 2006: 31)

Warwick Medical School

- 200 specimens
- purchased from von Hagens
- Funded by Strategic Health Authority
- First introduced 2008



Context

- Long association between dissection and anatomy education
- Resource constraints
 - Time
 - Qualified instructors
 - Body donation
- 'Tomorrow's Doctors' GMC, 2003, 2009
- Human Tissue Authority
- Current debates in education about:
 - the best means of teaching anatomy
 - the place of anatomy within the curriculum
 - Whether dissection is necessary for training doctors
- 'Body Worlds'
 - Public understanding of anatomy
 - Public display of plastinates

Range of teaching resources

- *Cadaveric dissection/prosections*
- *Plastinated prosections*
- *Multi-media*
 - *Primal Pictures, Anatomy.TV*
- *Living anatomy*
 - *Surface anatomy*
- *Medical Imaging*
 - *In vivo visualisation of anatomy and physiology*
- *Plastic models*
- *Autopsy*
- *Virtual simulations*
- Source: Sugand K, Abrahams P, Khurana A. 2010. The anatomy of anatomy: a review for its modernization. *Anat Sci Educ* 3:83-93.

Questions and themes

- What needs to be learned?
 - Anatomy, clinical detachment...
- Dimensionality
 - What is gained?
 - What is missing?
- Authenticity
- Ontological status

Ontological Status

- *‘In their materiality, plastinates are hybrids of the living and the dead. They are not so much “cyborgs”...as “inorgorgs”, inorganic organisms: 70 per cent plastic, 30 per cent flesh.’ (Hirschauer, 2006: 36).*

Hirschauer, S. (2006) Animated Corpses: Communicating with Post Mortals in an Anatomical Exhibition. *Body & Society*, 12, 25-52.

- *They are real in the sense that a cooked chicken has some tangible continuity with the living chicken it once was; it may also have some artistic elements created by the chef, but it is not just a representation in the way a drawing or a photograph of a chicken is. It is, or it was, a chicken, rather than being just a representation of a chicken. “Is it real?” “It was once”. (Walter, 2004: 473-4)*

Walter, T. (2004) Body Worlds: clinical detachment and anatomical awe.
Sociology of Health & Illness, 26, 464-488

- *'It is true that we have not asked what plastinated body parts are, even though they have been in use for up to 20 years...plastinated specimens take further the anonymity of the dissecting-room cadaver, but do not go as far as the anonymity of the skeleton. They represent a half-way house between the two...Dissecting room cadavers are separated from the world of the living by their presentation and preservation; plastinated specimens are further removed by replacing 70% of the tissue fluids with plastic...*

... A plastinated specimen is not a model that can be mass produced. Each whole-body plastinated specimen is unique, even though in educational contexts it may be used to throw light on generalized human anatomy' (Jones, 2002: 436-7)

Jones, D. G. (2002) Re-inventing anatomy: The impact of plastination on how we see the human body. *Clinical Anatomy*, 15, 436-440

Juxtapositions

- Plastinates/Cadavers
- Plastinates/Anatomical Models
- Plastinates/Living Bodies

Plastinates/Cadavers

- *'it was great to see the real thing, and be able to look at all the relations and it helped me to visualise the anatomy we were learning in 3D space' (questionnaire response).*
- *'I feel that something has been omitted from my experience which I would have found profound' (questionnaire response)*
- *'I think the prosections are beautiful. They are exquisite dissections, but they are so fragile, you can't touch them, and to me that was the biggest thing...we liked the [cadaveric] prosections because...we could pick them up, we could pull things, and say, ah, of I can track this muscle, you know, the effect is that this happens, and to be able to stick your fingers in things and say oh, right, ok...' (focus group).*

Plastinates/Anatomical Models

- *‘the plastinations are beautiful, they are exquisite, they are fantastic 3D diagrams, and you can’t do anything else with them’ (focus group)*
- *‘I find that the plastinates are kind of, look like plastic models that we have here, and they are really stylized, if you open the body you kind of have that variety...like they are painted, for example (focus group)*

Plastinates/Living Bodies

- Plastination transforms individual, unique bodies into representations of generic anatomy – ‘the body’ (Jones 2002).
- ‘where is that on your body?’
- kinaesthetic knowledge of one’s own body
- imagined patient

Concluding remarks

- Tension between authenticity and didactic value
- Asking ontological questions requires:
 - technical knowledge
 - Contextual understanding
- Multiple ontologies? (Mol 2007)

Mol, A. (2007) *The Body Multiple: Ontology in Medical Practice*, Durham and London, Duke University Press.

Acknowledgements

- Quotations from focus groups and questionnaires are from a study evaluating student views on plastinated specimens for anatomy learning, conducted in 2009 by Birgit Fruhstorfer, Julie Palmer, Steven Brydges and Peter Abrahams. Findings as yet unpublished.