Durham University

Insights

Institute *of* Advanced Study

'Stand Up Straight' Notes Toward A History of Posture

Sander L. Gilman

Volume 5 2012 Number 7

ISSN 1756-2074

About Insights

Insights captures the ideas and work-in-progress of the Fellows of the Institute of Advanced Study at Durham University. Up to twenty distinguished and 'fast-track' Fellows reside at the IAS in any academic year. They are world-class scholars who come to Durham to participate in a variety of events around a core inter-disciplinary theme, which changes from year to year. Each theme inspires a new series of *Insights*, and these are listed in the inside back cover of each issue. These short papers take the form of thought experiments, summaries of research findings, theoretical statements, original reviews, and occasionally more fully worked treatises. Every fellow who visits the IAS is asked to write for this series. The Directors of the IAS – Veronica Strang, Stuart Elden, Barbara Graziosi and Martin Ward – also invite submissions from others involved in the themes, events and activities of the IAS. *Insights* is edited for the IAS by Barbara Graziosi. Previous editors of *Insights* were Professor Susan Smith (2006–2009) and Professor Michael O'Neill (2009–2012).

About the Institute of Advanced Study

The Institute of Advanced Study, launched in October 2006 to commemorate Durham University's 175th Anniversary, is a flagship project reaffirming the value of ideas and the public role of universities. The Institute aims to cultivate new thinking on ideas that might change the world, through unconstrained dialogue between the disciplines as well as interaction between scholars, intellectuals and public figures of world standing from a variety of backgrounds and countries. The Durham IAS is one of only a handful of comparable institutions in the world that incorporates the Sciences, Social Sciences, the Arts and the Humanities.

The focal point of the IAS is a programme of work associated with, but not exclusive to, an annual research theme. At the core of this work lies a prestigious Fellowship programme. This programme gathers together scholars, intellectuals and public figures of world standing or world-promise to address topics of major academic or public interest. Their mission is to anticipate the new and re-interpret the old, communicating across and working between disciplinary boundaries.

Every year, the Institute invites as many as twenty highly creative individuals to spend up to three months in Durham. They are located in Cosin's Hall, a magnificent and spacious 18th century mansion which, together with Durham Cathedral and Durham Castle, forms part of Palace Green, dominating the World Heritage Site of Durham Peninsula. During their stay, Fellows engage with departments and colleges, deliver public lectures and seminars, and, above all, join an international community of researchers to address the theme selected for that year. Further details of the IAS and its Fellowship programme can be found at www.durham.ac.uk/ias/fellows

Copyright

'STAND UP STRAIGHT': NOTES TOWARD A HISTORY OF POSTURE

Even the remembered whisper of 'stand up straight' brings us to attention. Whether uttered by parent or teacher or sergeant, it is a call to be self aware or at least aware of how we are seen. Posture, that code for the way in which we stand, is used over and over again for a way to be. It is evoked to represent the ideal, the beautiful, the perfect body. We are the way we stand – ideally. This essay ranges from the discourse of what makes human beings beautiful to debates about the efficacy of the body in warfare and sport, to nineteenth-century evolutionary theory and beyond. Posture is understood as either part of fixed physiognomy, the inherent structures of the body, determined by inheritance, or as part of mobile physiognomy, determined by either pathology or culture. We stand the way we do because of either 'nature' or 'nurture' in these views of posture, and they define therefore the universe of concepts into which we as human beings are to be comprehended.

Entangled Genealogies

We are, as Karen Barad notes, 'responsible for the world of which we are a part, not because it is an arbitrary construction of our choosing but because reality is sedimented out of particular practices that we have a role in shaping and through which we are shaped' (Barad, 2001, p. 390). Posture is defined by the 'entangled genealogies' (p. 389) of the various uses and meanings associated with the very term 'posture' and not necessarily by the claims of those who define what posture is to be. Posture is a fluid concept that moves regularly between 'statics' (the position of the body in rest), 'mechanics' or 'gait' (how the body moves in space and time) and those activities such as 'sport,' 'dance,' or 'drill' (that culturally organize both static and mechanic movement). Posture represents inherently entangled discourses. While we can begin with 'statics,' this concept of posture is impacted by the rules by which one should sit, stand and present oneself in social situations in order to become 'human' and then a 'modern,' civilized citizen. Take the anglophone understanding of posture. The *OED* (Oxford English Dictionary) defines posture in multiple ways that are inherently entangled. Its root is the French *posture*, meaning the position of the body, that is documented from 1588 in Middle French and then in 1680 as *posteure* in a figurative use, which in turn has its origin in classical Latin *positura*. As in French its first meaning is as 'the relative disposition of the various parts of something; esp. the position and carriage of the limbs or the body as a whole, often as indicating a particular quality, feeling, etc.; an attitude, a pose. Hence, more generally: the manner in which a person bears himself or herself; natural carriage or deportment' (OED). It is the phrase 'natural carriage or deportment' that captures the core problem of the term. The way one 'naturally' appears is the way one acts. Sir Philip Sidney's *The Countesse of Pembrokes Arcadia* (1586) is the first usage: 'In another table was Atalanta; the posture of whose lims was so liuelie expressed, that if the eyes were the onely iudges, [...] one would haue sworne the very picture had runne.' A generation later in 1616, William Shakespeare in *Anthony and Cleopatra* uses it quite freely: 'I shall see Some squeaking Cleopatra Boy my greatnesse I' th' posture of a Whore.' What is striking is that the military meaning of posture as 'a particular position of a weapon, or a method of wielding it, in drill or battle' is documented as early as 1611 in W. Strachey's *For Colony of Virginea Britannia. Lawes Diuine, Morall & Martiall*: 'Concerning the training, and cleanely exercising of their Armes, & their postures,

the captains shall haue order and directions for the same vnder the Marshals hand [...].' Very quickly even the figurative meaning as 'a mental or spiritual attitude or condition' takes on its military implications in 1642 in the very title of J. Taylor's *An Apology for Private Preaching* [...] *whereunto is annexed* [...] *the Spirituall postures, alluding to that of Musket and Pike*. Indeed it is striking that thereafter the military meaning colors all future usage. The political meaning of posture as 'a state of being; a condition or situation in relation to circumstances' is also present in English from the seventeenth century as in a 1620 letter from Sir Henry Wotton: 'We stood thus in a posture of affairs [...] very favourable.' The scientific meaning of posture as it is used in contemporary scientific papers is a twentieth-century use but there is an obsolete scientific meaning as 'the position of a thing (or person) relative to another; position, situation' documented as early as 1605 in Francis Bacon's *The Twoo Bookes of Francis Bacon: Of the Proficience and Aduancement of Learning, Diuine and Humane*: 'In describing the fourmes of Vertue and Duty, with their situations and postures, in distributing them into their kinds, parts, Prouinces [...].' Posture thus has multiple, overarching meanings that exemplify the entangled genealogies inherent in any understanding of the human body.

The idealized upright static and mechanical posture in the early modern West seems to have originated in the late sixteenth century with both the development and representation of military drill formation. The break at this historical point in the meaning of drilling soldiers seems obvious to military historians (Knox, 2001, p. 49). Its impact on the use of the term was immediate. Indeed it is thus at its origin a quality and an image ascribed to *men*. Jacob de Gheyn's 117 illustrations for *The Exercise of Armes* (1607) present images of close order drill from Maurice of Orange's drill manual of the late 1590s, *Wapenhandelinghe van Roers, Musquetten ende Spiessen*, showing the optimum positions for carrying and shooting or using weapons (Parker, 2007). The resting position or 'attention' is the basis for the 'ideal' posture. This ideal or rest position is what comes to be 'standing at attention' with a more or less rigid spine, tucked-in chin and feet clearly positioned under the head, back but yet not rigidly aligned with the rest of the body. The 'plumb line' from the top of the head to the feet is present. All of the other positions illustrated by de Gheyn are functional – they show the reader/viewer how to hold the musket (or pike) in a series of positions that enables units of soldiers to volley fire or charge (Walker, 2008). The Nassau drill manual was intended to show how to load, shoot and reload in unison and therefore each movement had to be precise and was frozen in time in de Gheyn's 117 illustrations (Roodenburg, 1997). Indeed the very term for such drill-books is a 'posture book' as in 1631 when Ben Jonson in his drama *The divell is an asse* observes that they must:

> And by the vertue' of those, draw downe a wife
> There from a windo', worth ten thousand pound!
> Get him the posture booke, and's leaden men,
> To set vpon a table, 'gainst his Mistresse
> Chance to come by, that hee may draw her in,
> And shew her *Finsbury* battells (Jonson, 1631, iii. ii. p. 38).

By 1691 such use comes to be commonplace: 'He learned [...] how to handle the pike and musquet, and all postures belonging to them' (à Wood, 1691, p. 262). Posture is clearly defined; posture is visually represented; posture is manly, erect and upright.

Over the next century the rest position itself is so altered that by 1791 it is more rigidly 'aligned' with the feet together rather than apart and the spine rigidly erect (Gaulhofer, 1930, p. 62). As Michel Foucault commented in his chapter on 'docile bodies' in *Discipline and Punish*, 'the soldier was someone who could be recognized from afar; he bore certain signs: the natural signs of his strength and his courage, the marks, too, of his pride; his body was the blazon of his strength and valour' (Foucault, 1995, p. 135). Foucault stresses that: 'an erect

head, a taut stomach, broad shoulders, long arms, strong fingers, a small belly, thick thighs, slender legs and dry feet' define this body (p. 135). But 'by the late eighteenth century,' he writes, 'the soldier has become something that can be made; out of a formless clay, an inapt body, the machine required can be constructed; posture is gradually corrected; a calculated constraint runs slowly through each part of the body, mastering it, making it pliable' (1995, p. 135). Thus the plumb line itself evolved over time. This was clearly never a 'natural' position; it was learned and rehearsed until all soldiers at attention looked identical. This position came to define the military body and through the meanings attached to it, the normal, healthy individual. The military positions are analogous to the dance positions of the eighteenth century: clearly 'unnatural' and having a specific function only within the movements required for the exercise. Posture in dance and the military seem to be interrelated, not, as William H. McNeill claimed, because such organized movement reflects the intuitive imperative of the beating heart translated into action, but because of normative positions of what is acceptable, defined here as functional posture in any given setting (McNeill, 1995). While he is interested in movement to music his own project has yet another source. He writes of his own experience of 'swaggering in conformity with prescribed military postures.' And of this leading to a 'strange sense of personal enlargement; a sort of swelling out, becoming bigger than life, thanks to participation in collective ritual' (1995, p. 2). Drill and drill position have meaning; the military posture comes to define a collectivity in very specific ways.

By 1889 the Leipzig anatomist Christian Wilhelm Braune and his student Otto Fischer had dropped the plumb line, along with the now acceptable rigid posture of 'standing at attention,' and brought the study of military posture into the medical literature. Their statistical measurements of body posture remain the basis for all contemporary discussions of the 'straight line inside the body' (Braune and Fischer, 1889, p. 1) within the various sciences of posture from orthopedics to military medicine.[1] Rooted in Braune's complex analysis of the center of gravity in human anatomy, the study of posture is an attempt to translate such knowledge into a mechanical profile of what the upright body can be made to do under optimum circumstances and to define those circumstances. They quite easily use the concept of the 'plumb line' (1889, p. 2ff.) as a given means of imagining the forces throughout the body. The science of posture results from this moment in military medicine. 'Stand up straight' may not have first arisen in the military (parents may well have that priority back in the mists of time), but its first codified and visual documentation is in this world and this military origin of upright posture haunts later discussions of posture as a quality not of men but of human beings. Certainly this idea haunted the Prussian court that set the tone for Braune and Fischer's work. Kaiser Wilhelm II hired the American body culturist Elizabeth Marguerite de Varel Mensendieck (c.1866–1959), better known as Bess M. Mensendieck, to improve the posture of his courtiers:

> The potbellies of the ladies-in-waiting of the last German imperial court always annoyed Kaiser Wilhelm II. In an effort to appease him, whenever they stood at attention in his presence they folded their hands over their bulging abdomens. This posture made them look like fantastic beer-mugs, a sight which vexed Wilhelm further. Hearing that a sturdy little blonde U. S. esthete named Bess M. Mensendieck taught men & women how to stand and move gracefully, by means of what she called "functional exercises," he summoned her to do the same for his court. Cried the Kaiser: 'They are the most awkward women in the world. One never sees women at the courts of London, St. Petersburg or Rome stand about in the graceless attitudes I see at mine (*Time*, 1937).

Her correct posture is one we have seen before: 'When the human animal stands properly erect, an imaginary line should cut the nose, chin, breastbone and crotch. Another imaginary line should drop from the mastoid, in front of the shoulder joint, through the elbow and little finger (palm turned to the rear), side of knee and ankle. This is achieved by standing with feet

together, shoulders held back, abdomen tucked in, buttocks clenched' (*Time*, 1937). The ladies of the court could not stand up straight in this Prussian fashion but could be taught to do so.

Posture, Disability and Inheritance

At this moment in the nineteenth century there is an entire medical sub-specialty that defined the healthy body and treated the ill body based on notions of acceptable posture (think of this as a plumb line from Swedish gymnastics to German medical *Krankengymnastik* to modern gym culture). The range is almost always one that generates an image of the ideal posture, then moves to pathological postures such as the kyphotic and lordotic posture, flat back posture, sway-back posture and finally to the military posture as exaggeration of the ideal norm. Diagrams of the time show position of head (skull), neck (cervical vertebrae), thoracic and lumbar vertebrae, pelvis, leg (femur, tibia, fibula) and foot. Those are the anatomical features that define natural versus pathological posture, just as there is the bright line between the pre-human and the human in terms of their upright posture. The categories of healthy versus ill posture certainly have their roots in the medical understanding of correcting 'poor' posture in cases of what was clearly defined as pathological posture, such as the result of vitamin deficiency diseases like rickets (from vitamin D deficiency). Beginning with the first modern treatise of rickets, Daniel Whistler's *Disputatio medica inaugurales de morbo puerili Anglorum quem patrio idiômate indiginae vocant the rickets: quam Deo suppetias ferente* (1684), there has been a focus on the posture of the sufferer. Thomas Levacher de la Feutrie, in his *Traité du rakitis, ou l'art de redresser les enfants contrefaits* (1772), provides both exercises and implements to correct such pathologies (Malpas, 2004). The general sense is that rickets (called 'The English malady') presents a manifestly misshaping of the limbs in knock knees or bowed legs but also in the earliest stages a so-called 'tailorlike' posture which is seen to mirror the position that a tailor takes in sewing. The very image of the child with rickets now having its body reformed, straightened and corrected comes to define mechanical interventions in orthopedics, a medical discipline which uses instruments regularly to correct the body's malformation and ideally allow it to stand up straight. Disability in this sense is bad posture and correction is demanded to return the disabled body to the plumb line.

Bad posture is not only a sign of physical pathology but also of moral degeneration. The form of the external body reflects character as well as psyche. By the time of Daniel Gottlob Moritz Schreber (1808–1861) and his *Die ärztliche Zimmergymnastik* (1855) the line between physical illness and moral position had become completely blurred (if it was ever clear). Schreber advocated both his 'systematic remedial exercises' and countryside exercise for urban youth to overcome the problem of physical and moral degeneration. During his time the term 'Volksgesundheit' (people's health) was coined that reflected the inherent relationship between body and spirit. And in Germany the very late appearance of the industrial revolution demanded that it would be a machine that would correct bad posture. Thus it is not only exercise and training that corrects bad posture and bad minds but machines.

By the end of the century and the German exponent of self-cure Friedrich Eduard Bilz's (1842–1922) *Das neue Naturheilverfahren* (published in 1888; 3.5 million copies were sold to middle class readers in Germany who were convinced that they had to learn to stand up straight), 'pathological' or 'poor' was clearly linked not only to the machines that corrected posture, as in Schreber, but to machines that mimicked work. Think of the forerunners to our contemporary gym equipment that mimicked bicycle riding or stair walking. Bilz's popular text advocated machines that mimicked factory or farm work. 'Good' posture was accomplished by such

imitated work; the good citizen's posture was that of the citizen who could contribute to the society by work or war.

Not only physical but also psychological states are revealed by posture. In Joseph Simms' 1887 *Physiognomy Illustrated* he sets out a series of gaits and what they indicate about mental states. The 'toddling gait,' for example, indicated a helpless, childish man: 'the toes of his shoes are much further out of repair than the heels; [...] there are seldom all the buttons on the garments, and [...] both a glove and an umbrella have just been lost; occasioning the necessity for trying to recollect every place Mr. Toddler has been' (Simms, 1887, p. 267). He is contrasted with 'Miss Mary Frisk.' There was also a 'plunging gait' where the walker had a very exaggerated up and down motion to their steps, which Simms linked to alternating states of depression and buoyancy:

> The form of those so affected is quite in accordance with the up and down or undulatory appearance of the walk. Alternately you will find them in high spirits, full of hope and jubilant; again in deep depression, soon to rise into the opposite extreme. Hence the life of the plunger is one of fear and dread, hope and joy. His countenance most truthfully indicates this. Amid deep lines of sorrow and foreboding, may easily be perceived the laughing wrinkles round the eyes, and the traces of the cheerful smile that often plays around the mouth, and sets the chin so cheerily in harmony with the mobile lips. Almost in every instance the plunger will be found possessed of warm affection, but subject to deep depression on any want of affectionate reciprocation of the loving emotions (p. 397).

Even in the standard psychiatry textbooks of the day, such as those of the Munich clinical psychiatrist Emil Kraepelin (1896), unnatural posture is a defining moment for mental illness. But these postures may be an indication of earlier evolutionary development with 'attitudes of crouching like a beast without moving, standing or sitting in fixed poses which had an insane or delusional significance [...]' (Anon, 1902, p. 465). Thus the frozen catatonic posture is unnatural not only because it is frozen and unmoving over time but also because the positions themselves are pathological, i.e. the patients do not 'stand up straight.'

Inheritance is the key for such theories of posture. The model for the nineteenth century was evolutionary biology with a Lamarckian assumption about the inheritance of acquired characteristics, if only over time. But these alterations in posture were read as positive (if they were seen to be an increase in efficiency) or negative (if they are read as potentially a throwback to earlier, inefficient states of posture). Meanwhile the eugenist Francis Galton postulated the existence of a 'bell curve,' with a 'normal' distribution of positive and negative qualities that are bound to inheritance. He created this in analogy to the 'normal' distribution of height. While he began his categories of 'genius' with 'the judges of England between 1660 and 1865' (Galton, 1869, p. 55), he concluded with an appendix on oarsmen and wrestlers of the north country[2] (pp. 305ff). It is also evident that Galton, at least, saw the ability at sports to be a form of 'genius' because of its inheritability. The eugenists thereafter 'probed participants' physical and mental health by measuring posture and strength, peering into eyes, ears, and throats' (Rosen, 2004, p. 113). A military notion of posture and the plumb line is inherent to their understanding of bodily perfection.

The widely-read Canadian physician and eugenist B. G. Jefferis defined this perfect posture at the close of the nineteenth century as the antithesis of illness and moral decay: 'The following is said to be a correct posture for walking: Head erect—not too rigid—chin in, shoulders back. Permit no unnecessary motion about the thighs. Do not lean over to one side in walking, standing or sitting; the practice is not only ungraceful but deforming and therefore unhealthful' (Jefferis and Nichols, 1894, p. 34). His contemporaries in very different arenas also resorted

to this idea of posture. In 1839, the French singer François Delsarte created a system of bodily training, which quickly became the dominant manner of training the body in every aspect of the public sphere. He saw the emotions as natural and claimed that every emotion had a natural expression and posture. Delsarte places the ideal posture as 'standing firm on both legs' (Veder, 2010, p. 820). The Victorian singing teacher George Copland, addressing the gifted amateur, suggests that they 'stand up straight, and keep the shoulders well back, as this gives the lungs more room to properly expand. [...] There need be no stiffness in the attitude' (Copland, 1897, pp. 164–5). The singing master Francesco Lamperti (1813–1892), cited as late as 1921, states that 'the pupil should hold himself erect, with the chest expanded and the shoulders easy—in a word—in the position of a soldier' (Lamperti, 1939, p. 3). The line between health and posture seems clear; between art and posture is equally evident in the time. For the aesthetic defines the human and the grotesque and deformed denies the very essence of humanness.

Poor posture returns us to the very notion of what is human. H. G. Wells' *The Island of Doctor Moreau* (1896) presents the horrors of Moreau's experiments that merged animals with humans in terms of the erect posture of the offspring: 'I could see the Thing rather more distinctly now. It was no animal, for it stood erect' (Wells, 1896, p. 83). Over time they become more primitive 'and they walked erect with an increasing difficulty' (p. 230). Yet 'the dwindling shreds of the humanity still startled me every now and then, a momentary recrudescence of speech perhaps, an unexpected dexterity of the fore-feet, a pitiful attempt to walk erect' (p. 233). They are experimental throwbacks into the world before Homo sapiens, yet created by the very mind of the Homo sapiens. Wells' critique relies on the illusion of human progress and the malleability of posture as well as character: 'a living being may [...] be regarded as raw material, as something plastic, something that may be shaped and altered, [...] and the organism as a whole developed far beyond its apparent possibilities. We overlook this collateral factor, and so too much of our modern morality becomes mere subservience to natural selection' (Wells, 1895, p. 90). Posture may be changed but there is always the anxiety of degeneration, of a 'morbid deviation from the norm,' (to use B. A. Morel's classic formulation from mid century) from being an upright, erect human being devolving into someone or some Thing that does not 'stand up straight.'

H. G. Wells' 'Thing' is not quite human and therefore has not the erect posture that defines what is imagined to be the civilized being. Class as well as race are implicated in individuals having primitive posture: yet the idea that the lower classes are like more primitive animals seems never quite to vanish, as an essay in *The Lancet* noted in 1922: 'Some primitive races who have the squatting habit, and even many country people at home, keep the knees and back bent and have a carriage and gait not much better than that of the higher apes. As a general rule, the more highly civilised the people the better is the carriage, but a perfectly erect carriage cannot be attained without drill' (Thompson, 1922, p. 107). This observation called forth a response by another physician who claimed that the lower class actually enjoyed the 'all fours' position (Campbell, 1922, p. 154).

The medicalization of working-class and middle-class fashion impacted on posture, from the training of women to more efficient work to middle-class use of corseting: 'charwomen do not enjoy the "all fours" position, for they do not adopt it but merely a pseudo-quadruped attitude—viz., on the hands and knees, principally the latter, so that the hands may be freer for work—and that is the source of most of their troubles, the pads which they should wear being either missing or insufficient. Otherwise their work is very healthy, and the source of the popular objection to it is rather the stress put upon the pride than upon the back. Young girls in cookery schools, too, are now so full of the pride of the erect posture and of that lofty atmosphere to which their

emotions have raised them that who dare mention to them such a lowly attitude as the 'all fours' position, much less their adoption of it! Corsets, too, probably interfere' (Thompson, 1922, p. 251). The anti-corseting literature is full of comments on the poor posture that results from corseting, forgetting that the corset was not merely a fashion item but was also a primary means of reforming the body of those suffering from poor posture, whether the result of rickets or poor education (Johnson, 2001).

In 1888, The Rational Dress Society in London protested in an editorial note in the opening number of its *Gazette* '[…] against the introduction of any fashion in dress that either deforms the figure, impedes the movements of the body, or in any way tends to injure the health' (King, 1888, p. 1). Posture was natural; all corseting caused deformation of posture and gait. The medical literature against corseting was extensive and argued that corseting deformed posture, bracketing the fact that corsets were also a standard means of treatment for scoliosis and hernia. Thus we can eavesdrop on an exchange in 1909–1910 between two British physicians in *The Lancet* about the dangers of corseting. The exchange begins when the Wimpole Street physician Heather Biggs writes to state 'women have found by centuries of accumulated experience that corsets are to them structurally indispensable, whilst modern science has also shown that they are physiologically beneficial' (Bigg, 1909, p. 1630). Cecil E. Fish responds quickly condemning the very idea that the corset may have beneficial results to posture: 'If the erect posture demands it, then we should be wise to put our babies into stays as soon as they begin to toddle. God forbid it' (Fish, 1909, p. 1774). Bigg's response to this is of interest as it argues that erect posture may indeed be the cause of a wide range of ailments. Evolutionary medicine in its first epoch (it returns in the close of the twentieth century) seems to be able to divine the essential nature of human posture – and it is not upright:

> In writing on corsets some few years since I pointed this out, and, taking a mechanical or morphological view of the body, I explained it by the fact that man is built for a quadruped and not for an erect position, and that therefore neither his peritoneal slings nor his abdominal walls are adequate to resist the persistent drag of gravity upon his abdominal viscera. I also opined that in all likelihood the abdominal walls were by evolution strengthening, and it would appear from Mr. Arbuthnot Lane's observations than the peritoneal slings are tending also to strengthen in a similar way. And I advocated the use of corsets with the proper loin-band hold, because it appeared to me that they were in most instances positively necessary to combat the inherent structural disability under which mankind suffers when in the erect posture (Bigg, 1910, p. 204).

The corset medically corrects a body damaged by its evolution to upright posture.

Speculations about the nature of correct and corrected gait and posture was the focus of the new science of photography. The photograph was seen to provide empirical evidence about how one walked or stood. Eadweard J. Muybridge attempted empirically to clarify these questions by using sequential photography to document human gait across class, 'race' and disability in his photographic project on human and animal locomotion between 1883 and 1886. While indebted to the French chronophotographer Étienne-Jules Marey, Muybridge's work provided the first empirical evidence of human movement in space and time and set claims for all subsequent use of images to document posture. Indeed it was Marey's photographic work that would inspire the first scientific study of human gait – Braune and Fischer's detailed atlas of military posture of 1889.

By the mid twentieth century 'postural health' is defined as efficiency illustrated by normative images of the healthy and unhealthy body within medicine.[3] Good posture is 'important for proper functioning of the body and contributes to good appearance. Proper alignment of the

body parts promotes efficiency of movement and endurance. The person who has good posture and who moves gracefully projects poise, confidence, and dignity' (Kendall and Kendall, 1968, p. 320). It reflects character as well as health and beauty as 'faulty posture' is 'unattractive.' Good posture demands a postural education and constant self-correction to stand up straight:

> **Head is held erect, not turned or tilted to one side.**
> **Shoulders are level.**
> Arms hang easily at the sides with the palms of the hands toward the body.
> Hips are level, with the weight of the body borne equally by both legs.
> Kneecaps face straight ahead.
> Feet point straight ahead or toe out slightly.
> In other words, they may be parallel, or the feet may be about 1 inch further apart in front than at the heels.
> The weight of the body is carried toward the outer sides of the feet, and evenly balanced between the heel and the forefoot.
> Stand in front of a mirror and check to see that feet and knees are in good position, and that hips and shoulders are level. Make a habit of standing in a good position, with weight borne evenly on both feet.
> Good posture must be built from the feet up. If the feet and knees are in good position, there is a better chance that the rest of the body will line up properly (Kendall and Kendall, 1968, p. 320).

The 'disabled' body is thus seen as having poor posture that demands correction to be healthy. This certainly has its roots in the Enlightenment notion of retraining or repairing bad posture. The idea of an efficient posture that is part of an evolutionary pattern that leads to an ideal military body demands correction of disabled bodies or, in terms of the model of evolutionary development that defines posture as the first principle, extinction. Disability is thus to be found, as we shall see, as defined by poor posture within a wide range of categories, including gender and race.

By the twentieth century functional definitions of posture come to dominate the debate about posture, at least within medicine. Little attention is given to its origin. The Posture Committee of the American Academy of Orthopedic Surgeons in 1947 defined posture as 'the relative arrangement of the parts of the body.' They then make a distinction between 'good posture: the state of muscular and skeletal balance which protects the supporting structures of the body against injury or progressive deformity irrespective of the attitude in which these structures are working or resting' and poor posture as 'a faulty relationship of the various parts of the body which produce increased strain on the supporting structures and in which there is less efficient balance of the body over its base of support.' This is clearly the ideology that dominates Braune and Fischer's work on military posture in 1889. This becomes the officially accepted medical notion so that a standard textbook of the late twentieth century can define posture as a 'position or attitude of the body; the relative arrangement of body parts for a specific activity; a characteristic manner of bearing one's body' (Smith et al., 1996, p. 401). The idea of the functional efficiency inherent in the military model never vanishes, but thinkers such as Moshe Feldenkrais at mid century argue that such postural 'health' is not determined by an 'ideal' body. Even severely disabled bodies can achieve postural efficiency: 'Proper posture is such [...] that the movement is performed with the minimum of work, i.e., with the maximum of efficiency' (Feldenkrais, 1949, p. 34). Efficiency is a Fordist concept, which reflects the fascination in the 1920s with time and motion studies such as those by Frank and Lillian Gilbreth as well as Frederick Winslow Taylor; it is the appropriate effort expended in the realm of work to accomplish a task. This defines good posture in the translation of a military concept to the industrial world.

The entangled genealogies of posture are reflected in virtually every discussion of the nature and form of the human – from race to gender, from pathology to beauty – it is, to use Donna Haraway's term, a 'corporeal fetish' that mistakes 'heterogeneous relationality for a fixed, seemingly objective thing.' Of equal importance in studying the history of posture is the assumption that the specific use of posture '[...] denies the ongoing action and work that it takes to sustain technoscientific material-semiotic bodies in the world' (Haraway, 1997, p. 142). It is a slippery concept as Judith Butler observed in *Bodies That Matter*: '[...] the materiality of the body [...] moved me into other domains. I tried to discipline myself to stay on the subject, but found that I could not fix bodies as simple objects of thought. Not only did bodies tend to indicate a world beyond themselves, but this movement beyond their own boundaries, a movement or boundary itself appeared to be quite central to what bodies "are." I kept losing track of the subject. I proved resistant to discipline. Inevitably, I began to consider that perhaps this resistance to fixing the subject was essential to the matter at hand' (Butler, 1993, p. ix). Posture is perhaps an index of that resistance to discipline in the very world of bodily discipline. It draws bright lines between male and female bodies seen as sites defined by posture and reflects the very debates about race and gender inherent in the posture discussions of the nineteenth century. The entangled genealogies of posture provide a means of teasing out these relationships in new and surprising ways.

Notes

[1] See also Braune and Fischer's *Der Gang des Menschen*, two volumes (1899). See the English language reprint as *Human Mechanics* (1963, Wright-Patterson Air Force Base, Ohio: Aerospace Medical Research Laboratories, Aerospace Medical Division, Air Force Systems Command) and then as *On the Centre of Gravity of the Human Body as Related to the Equipment of the German Infantry Soldier* (1985, Berlin; New York: Springer-Verlag).

[2] See p. 23 (on race); p. 4 (on Jews and Italians) and pp. 312–4 (on wrestlers).

[3] See the turn to a social rather than a medical definition of disability and the meaning of posture in Tobin Siebers, *Disability Theory* (2008, p. 58). See also Lennard Davis, *Bending Over Backwards: Disability, Dismodernism and Other Difficult Positions* (2002).

Reference List

à Wood, A. (1691) *Athenæ Oxonienses: An exact history of all the writers and bishops who have had their education in the most ancient and famous University of Oxford, from the fifteenth year of King Henry the Seventh, Dom. 1500, to the end of the year 1690 representing the birth, fortune, preferment, and death of all those authors and prelates, the great accidents of their lives, and the fate and character of their writings: to which are added, the Fasti, or, Annals, of the said university, for the same time*. London: Printed for Tho. Bennet.

Anon. (1902) The stereotyped attitudes and postures of the insane in regard to diagnosis and prognosis. *The Lancet* 159 (4094): 465–6.

Barad, K. (2001) *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Bigg, H. (1909) Civilization and the corset. *The Lancet* 174 (27 November): 1630–1.

- - - . (1910) Civilization and the corset. *The Lancet* 175 (15 January): 203–5.

Braune, C. W. and Fischer, O. (1889) *Über den Schwerpunkt des menschlichen Körpers mit Rücksicht auf die Ausrüstung des deutschen Infanteristen*. Leipzig: S. Hirzel.

- - - . (1899) *Der Gang des Menschen*. Leipzig: B. G. Teubner.

Butler, J. (1993) *Bodies That Matter: On the Discursive Limits of Sex*. London: Routledge.

Campbell, H. (1922) The erect posture. *The Lancet* 199(5134): 154.

Copland, G. (1897) Hints on singing. *The Minim: A Musical Magazine for Everybody* 4(43): 164–5.

Davis, L. (2002) *Bending Over Backwards: Disability, Dismodernism and Other Difficult Positions*. New York: New York University Press.

Feldenkrais, M. (1949) *Body and Mature Behavior*. New York: International University Press.

Fish, C. E. (1909) Civilization and the corset. *The Lancet* 174 (11 December): 1774–5.

Foucault, M. (1995) *Discipline & Punish: The Birth of the Prison*. Translated by Sheridan, A. New York: Vintage.

Galton, F. (1869) *Hereditary Genius: An Inquiry Into Its Laws And Consequences*. London: Macmillan.

Gaulhofer, K. (1930) *Die Fusshaltung. Ein Beitrag zur Stilgeschichte der menschlichen Bewegung*. Kassel: Wissenschaftliche Gesellschaft für körperliche Erziehung.

Haraway, D. J. (1997) *Modest Witness@Second Millennium. FemaleMan Meets OncoMouse: Feminism and Technoscience*. New York: Routledge.

Jefferis, B. G. and Nichols, J. L. (1894) *Searchlights on Health, Light on Dark Corners: A Complete Sexual Science and a Guide To Purity and Physical Manhood: Advice To Maiden, Wife and Mother, Love, Courtship And Marriage*. Toronto: J. L. Nichols.

Johnson, W. D. (2001) Cultural rhetorics of women's corsets. *Rhetoric Review* 20: 203–33.

Jonson, B. (1631) *The workes of Benjamin Jonson*. London: s. n.

Kendall, H. and Kendall, F. (1968) Developing and maintaining good posture. *Physical Therapy* 48: 319–36.

King, E. M. (1888) Editorial note in *Rational Dress Society Gazette*: 1–2.

Knox, M. and Williamson, M. (2001) *The Dynamics of Military Revolution*, 1300–2050. Cambridge: Cambridge University Press..

Lamperti, F. (1939) *The Art of Singing*. London: G. Schirmer.

McNeill, W. H. (1995) *Keeping Together in Time: Dance and Drill in Human History*. Cambridge, MA: Harvard University Press.

Malpas, C. (2004) Jules Guérin Makes his Market: The Social Economy of Orthopaedic Medicine in Paris, 1825–1845. In de Blécourt, W. and Usborne, C. (eds.) *Cultural Approaches to the History of Medicine: Mediating Medicine in Early Modern and Modern Europe*. New York: Palgrave Macmillan, pp. 187–213.

Parker, G. (2007) The limits to revolutions in military affairs: Maurice of Nassau, the Battle of Nieuwpoort (1600), and the legacy. *Journal of Military History* 71: 331–72.

Rabinbach, A. (1991) *The Human Motor. Energy, Fatigue and the Origins of Modernity*. Los Angeles: University of California Press.

Roodenburg, H. (1997) How to Sit, Stand or Walk: Toward a Historical Anthropology of Dutch Paintings. In Franits, W. (ed.) *Looking at Seventeenth-Century Dutch Art: Realism Reconsidered*. New York: Cambridge University Press, pp. 175–84.

Rosen, C. (2004) *Preaching Eugenics: Religious Leaders and the American Eugenics Movement*. New York: Oxford University Press.

Siebers, T. (2008) *Disability Theory*. Ann Arbor: University of Michigan Press.

Simms, J. *Physiognomy Illustrated; Or, Nature's Revelations of Character: A Description of the Mental, Moral, and Volitive Dispositions of Mankind, as Manifested in the Human Form and Countenance*. New York: Murray Hill.

Smith, L. K., Weiss, E. L. and Lehmkuhl, D. L. (1996) *Brunnstrom's Clinical Kinesiology*, 5th edition. Philadelphia: F. A. Davis.

Snyder, S., Brueggermann, B. and Garland-Thomson, R. (eds.) (2002) *Disability Studies: Enabling the Humanities*. New York: Modern Language Association Press.

Thompson J. K. (1922) The erect posture. *The Lancet* 199(5133): 107–9; 251.

Time (1937) Posture Lady. (5 April).
See http://www.time.com/time/magazine/article/0,9171,757573,00.html

Veder, R. (2010) The expressive efficiencies of American Delsarte and Mensendieck body culture. *Modernism/modernity* 17: 819–38.

Walker, S. J. (2008) Arms and the man: constructing the soldier in Jacques de Gheyn's 'Wapenhandelinghe.' *Nederlands Kunsthistorisch Jaarboek* 58: 138–61.

Wells, H. G. (1895) The limits of individual plasticity. *The Saturday Review* (19 January): 89–90.

- - - . (1896) *The Island of Dr Moreau*. Garden City, NY: Garden City Publishing.

Backlist of Papers Published in Insights

2008 Volume 1

No.	Author	Title	Series
1	Boris Wiseman	Lévi-Strauss, Caduveo Body Painting and the Readymade: Thinking Borderlines	General
2	John Hedley Brooke	Can Scientific Discovery be a Religious Experience?	Darwin's Legacy
3	Bryan R. Cullen	Rapid and Ongoing Darwinian Selection of the Human Genome	Darwin's Legacy
4	Penelope Deutscher	Women, Animality, Immunity – and the Slave of the Slave	Darwin's Legacy
5	Martin Harwit	The Growth of Astrophysical Understanding	Modelling
6	Donald MacKenzie	Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets	Modelling
7	Lorraine Code	Thinking Ecologically about Biology	Darwin's Legacy
8	Eric Winsberg	A Function for Fictions: Expanding the Scope of Science	Modelling
9	Willard Bohn	Visual Poetry in France after Apollinaire	Modelling
10	Robert A. Skipper Jr	R. A. Fisher and the Origins of Random Drift	Darwin's Legacy
11	Nancy Cartwright	Models: Parables v Fables	Modelling
12	Atholl Anderson	Problems of the 'Traditionalist' Model of Long-Distance Polynesian Voyaging	Modelling

2009 Volume 2

1	Robert A. Walker	Where Species Begin: Structure, Organization and Stability in Biological Membranes and Model Membrane Systems	Darwin's Legacy
2	Michael Pryke	'What is Going On?' Seeking Visual Cues Amongst the Flows of Global Finance	Modelling
3	Ronaldo I. Borja	Landslides and Debris Flow Induced by Rainfall	Modelling
4	Roland Fletcher	Low-Density, Agrarian-Based Urbanism: A Comparitive View	Modelling
5	Paul Ormerod	21st Century Economics	Modelling
6	Peter C. Matthews	Guiding the Engineering Process: Path of Least Resistance versus Creative Fiction	Modelling
7	Bernd Goebel	Anselm's Theory of Universals Reconsidered	Modelling
8	Roger Smith	Locating History in the Human Sciences	Being Human
9	Sonia Kruks	Why Do We Humans Seek Revenge and Should We?	Being Human
10	Mark Turner	Thinking With Feeling	Being Human
11	Christa Davis Acampora	Agonistic Politics and the War on Terror	Being Human
12	Arun Saldanha	So What *Is* Race?	Being Human
13	Daniel Beunza and David Stark	Devices For Doubt: Models and Reflexivity in Merger Arbitage	Modelling
14	Robert Hariman	Democratic Stupidity	Being Human

No.	Author	Title	Series
2010 Volume 3			
1	John Haslett and Peter Challenor	Palaeoclimate Histories	Modelling
2	Zoltán Kövecses	Metaphorical Creativity in Discourse	Modelling
3	Maxine Sheets-Johnstone	Strangers, Trust, and Religion: On the Vulnerability of Being Alive	Darwin's Legacy
4	Jill Gordon	On Being Human in Medicine	Being Human
5	Eduardo Mendieta	Political Bestiary: On the Uses of Violence	Being Human
6	Charles Fernyhough	What is it Like to Be a Small Child?	Being Human
7	Maren Stange	Photography and the End of Segregation	Being Human
8	Andy Baker	Water Colour: Processes Affecting Riverine Organic Carbon Concentration	Water
9	Iain Chambers	Maritime Criticism and Lessons from the Sea	Water
10	Christer Bruun	Imperial Power, Legislation, and Water Management in the Roman Empire	Water
11	Chris Brooks	Being Human, Human Rights and Modernity	Being Human
12	Ingo Gildenhard and Andrew Zissos	Metamorphosis - Angles of Approach	Being Human
13	Ezio Todini	A Model for Developing Integrated and Sustainable Energy and Water Resources Strategies	Water
14	Veronica Strang	Water, Culture and Power: Anthropological Perspectives from 'Down Under'	Water
15	Richard Arculus	Water and Volcanism	Water
16	Marilyn Strathern	A Tale of Two Letters: Reflections on Knowledge Conversions	Water
17	Paul Langley	Cause, Condition, Cure: Liquidity in the Global Financial Crisis, 2007–8	Water
18	Stefan Helmreich	Waves	Water
19	Jennifer Terry	The Work of Cultural Memory: Imagining Atlantic Passages in the Literature of the Black Diaspora	Water
20	Monica M. Grady	Does Life on Earth Imply Life on Mars?	Water
21	Ian Wright	Water Worlds	Water
22	Shlomi Dinar, Olivia Odom, Amy McNally, Brian Blankespoor and Pradeep Kurukulasuriya	Climate Change and State Grievances: The Water Resiliency of International River Treaties to Increased Water Variability	Water
23	Robin Findlay Hendry	Science and Everyday Life: Water vs H_2O	Water
2011 Volume 4			
1	Stewart Clegg	The Futures of Bureaucracy?	Futures
2	Henrietta Mondry	Genetic Wars: The Future in Eurasianist Fiction of Aleksandr Prokhanov	Futures
3	Barbara Graziosi	The Iliad: Configurations of the Future	Futures
4	Jonathon Porritt	Scarcity and Sustainability in Utopia	Futures
5	Andrew Crumey	Can Novelists Predict the Future?	Futures
6	Russell Jacoby	The Future of Utopia	Futures
7	Frances Bartkowski	All That is Plastic... Patricia Piccinini's Kinship Network	Being Human

No.	Author	Title	Series
8	Mary Carruthers	The Mosque That Wasn't: A Study in Social Memory Making	Futures
9	Andrew Pickering	Ontological Politics: Realism and Agency in Science, Technology and Art	Futures
10	Kathryn Banks	Prophecy and Literature	Futures
11	Barbara Adam	Towards a Twenty-First-Century Sociological Engagement with the Future	Futures
12	Andrew Crumey and Mikhail Epstein	A Dialogue on Creative Thinking and the Future of the Humanities	Futures
13	Mikhail Epstein	On the Future of the Humanities	Futures

2012 Volume 5

1	Elizabeth Archibald	Bathing, Beauty and Christianity in the Middle Ages	Futures II
2	Fabio Zampieri	The Holistic Approach of Evolutionary Medicine: An Epistemological Analysis	Futures II
3	Lynnette Leidy Sievert	Choosing the Gold Standard: Subjective Report vs Physiological Measure	Futures II
4	Elizabeth Edwards	Photography, Survey and the Desire for 'History'	Futures II
5	Ben Anderson	Emergency Futures	Futures
6	Pier Paolo Saviotti	Are There Discontinuities in Economic Development?	Futures II

Insights

Insights is edited by Barbara Graziosi, IAS Director and Professor of Classics.
Correspondence should be directed to Audrey Bowron (a.e.bowron@durham.ac.uk)