Ecologies of Labour: The Anthropocene Body as a Body of Work

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While the new geological epoch of the Anthropocene waits patiently in the wings for its official announcement by the International Union of Geological Sciences in the next year or so, evidence for its existence is already spread across the globe from the omnipresence of concrete particles, radioactive isotopes from nuclear testing, widely reported plastic pollution, and the billions of chicken bones that have entered the fossil record (because humans consume so many of them).[1] The term is teetering upon common use, but it refers to a new geological epoch of which we are witnessing the emergence but is not yet declared.

About twelve thousand years ago the current geological epoch began: the Holocene. It marked the end of a string of ice ages in which the poles of the earth spread and thawed, creating deserts of ice across Eurasia, sometimes hundreds of metres thick, that left much of the region uninhabitable for long periods. The Holocene marks a beat in earth history in which the weather has been more clement and equable than at any other point in the past — by which I mean, clement and equable … for humans. Towards the end of the Pleistocene (the preceding epoch), the earth's human population had dipped as low as an estimated ten thousand people; once the weather turned in favour of our species, however, the population has ballooned by approximately 730,000 per cent. That is the kind of growth that leaves its mark on an environment: a permanent mark. In ten thousand years' time, humans will be long gone, but traces of buildings, mines, radioactive waste from depleting nuclear reactors (they will take over fifty thousand years to degrade fully), the fossils of those chicken bones, and a wide variety of other human detritus will still stubbornly be part of the environment.

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[1] For concrete particles, see Sam Wong, 'Marks of the Anthropocene: 7 Signs We Have Made Our Own Epoch', *New Scientist*, 7 January 2016 <https://www.newscientist.com/article/dn28741-marks-of-the-anthropocene-7-signs-we-have-made-our-own-epoch/>; for chicken bones, see Damian Carrington, 'How the Domestic Chicken Rose to Define the Anthropocene', *Guardian*, 31 August 2016 <https://www.theguardian.com/environment/2016/aug/31/domestic-chicken-anthropocene-humanity-influenced-epoch> [both accessed 13 May 2018]. On plastic pollution, see Jan Zalasiewicz and others, 'The Geological Cycle of Plastics and Their Use as a Stratigraphic Indicator of the Anthropocene', *Anthropocene*, 13 (2016), 4–17.

But while we have been making this world, it has also been remaking us. And although the reshaping of our bodies is something that has been taking place fairly consistently for about ten millennia, there are a few key moments in our past that might be seen as anatomical revolutions: changes to our behaviour and ways of interacting with the world that are so significant as to alter us, permanently. The Agricultural Revolution is one such moment — when we settled down and learned to grow and rear our food (*c.* 8–10,000 years ago). The Metropolitan Revolution — the rise of the earliest cities about five thousand years ago — also heralded changes to our ways of being, introducing greater dynamics of inequality and changing the way that we work. But by far the greatest contributor to the flat-footed, short-sighted, hunched, allergic, and adipose Anthropocene body that most of us shuffle about in today is the period of the Industrial Revolution. At each of these three points in the history of our species the ways we lived changed, and the ways we worked changed; and as we did so, we changed our environment, shifting its balance and changing its ecology.

Over just a few thousand years, the changes that may be counted in and on our bodies are numerous, with different times and places writing different symptoms onto and within us. While it is not just about work — the jobs that we do and the kinds of jobs that are available or necessary within a given environment — these have a huge impact on our shape, our life expectancy, the functionality of our joints, levels of morbidity, and even our facial appearance. We Anthropocene humans are a body of work, one in which our labour permanently leaves its mark upon us; and as the Victorians did so very much of it, the ways they worked are an ideal example for what happens when some DNA code meets a complex environment, one that it was not expecting.

An ecology of labour is a way either of describing the variety, range, and manner of work done by an individual or of characterizing the kinds of work performed by a small social group, a tribe, a village, a town, or an entire society. Like a biological ecosystem (of which it is a kind), labour is a system that attempts to be self-sustaining and must adapt swiftly to changes in the environment in order to succeed in it. For example, it is no coincidence that with the rise of the city several thousand years ago, as new models of labour emerged, so did 'exercise'. Exercise is a cultural barometer for how disconnected a group has become from its environment, and it also speaks of deep inequality between those who labour to provide food, and those for whom it is provided. Exercise emerges among a slave-owning elite as an acknowledgement that their bodies are becoming increasingly debilitated through lack of work. Exercise (leisure, too) flowers because of an ecological imbalance between the body and place, and its emergence as a reinvented and embodied work attempts to correct a sharp inequality between slave owners and their slaves. (This means that

the Olympics today has roots that go all the way back to Greek slavery.) What we can see is that labour is a self-correcting ecological system, but instead of it being about birth, it is about bodies and the work that they do, or do not, perform.

I want to suggest here that one of the ways that we might understand how the human body has changed in the Anthropocene is through looking at ecologies of labour and their key moments of change, spread throughout our history at a couple of key moments which will throw the Victorian body into luminous relief. Even then, we will look only glancingly at the Victorians' working day, as well as their height, spines, feet, and knees.

Making sense of deep time

The scale of time, and the punctuated equilibrium that exists in the kinds of work done by humans since the genus first walked the planet about two million years ago, is so extreme and dynamic that only analogy can make sense of it. If the first letter of this article 'W' is used to mark the earliest estimate for the existence of *Homo habilis* (2.3 million years ago), then the Agricultural Revolution (the one in which humans first planted crops and reared livestock around ten thousand years ago) does not begin until about seventeen words before the article's end. For the rest of this time, hominins were a hunter-gathering species. This does not mean that each tribe and people lived the same way, but it does mean that they all worked by hand, sharing similar early technologies for toolmaking and migrating in all directions, all the time. After the Agricultural Revolution, the kinds of work done by the human body inevitably begins to change in focus; camps become settlements, villages, towns, and about 4–5,000 years ago (about seven words from the end of this article) there is evidence of early cities like Uruk in modern Iraq (the Metropolitan Revolution). To provide some sense of just how recent the Industrial Revolution is in the context of human history, dating it from 250 years ago, it would begin only in the last two characters of this article — the final letter and the full stop. It is when the Victorian period is at its height, celebrating its achievements with the Great Exhibition in 1851, that something more quietly significant happens that divides the past and future of our species.

Urban life and the refinement of labour

The tipping point is reported in the census of 1851. During the nineteenth century, London's population grew quickly; from 2.2 million in 1841 it more than doubled in size to 4.8 million by 1881. Population growth like this may seem normal to us, but what happened during those forty years

was part of a larger and more significant story that marked a shift in the ecological balance between humans and the environment, disease, and morbidity. In the 1841 census, the urban population was 48.3 per cent of the total. By the time of the next census in 1851, the scales had tipped, the figure jumping to 54 per cent. There is no time before this when a country's rural population was outnumbered by an urban or metropolitan one. And the trend continued: by 1891, the urban population had ballooned to over 75 per cent of the total.

What is particularly significant about the Victorians is that unlike those other revolutions (the Agricultural and the Metropolitan) this chattering culture was primed and readied to document it in ways technologically impossible previously. Writing emerges slowly out of Mesopotamia and Egypt long after the appearance of the first cities, and wide literacy in our analogical timescale only arrives at the final full stop of this article.

The ecology of labour that predominated for well over 99 per cent of human history (before the Agricultural Revolution) was one that included a fair amount of variety. Without domesticated animals (wheels do not arrive until the late Neolithic), all travel was done on foot (without the help of shoes, which palaeoanthropologist Erik Trinkaus has argued appeared only about forty thousand years ago).[2] There was tool use for a substantial amount of this time and, of course, toolmaking.

Like any ecosystem, balance can be found in such variety. And although these early humans were plagued by health problems, their functional fitness meant that they were not overwhelmed by biomechanical and metabolic pathologies to the extent that modern humans are. However, a little nostalgia is a dangerous thing. The lives of these early humans were impossibly precarious. Adults rarely got to meet their grandchildren: they died from diseases or infections, and even from minor injuries incurred during day-to-day tasks like toolmaking. Their lives were shorter, harder, and their stomachs emptier, but what they did with their bodies remains instructive.

What is a *normal* working day?

Hunter-gathering requires the refinement of a range of skills: understanding what plants and berries are digestible and which are poisonous; which nuts are easiest to crack; how to track and pursue a range of wild animals; how to endurance-hunt; how to prepare meat once caught; how to build shelters, make fire, protect offspring, cook … the list goes on. In turn, the body that evolved during the Pleistocene epoch (2.5 million years

[2] Erik Trinkaus, 'Anatomical Evidence for the Antiquity of Human Footwear Use', *Journal of Archaeological Science*, 32 (2005), 1515–26.

ago–11,700 BCE) adapted favourable selections to meet those needs and that environment. In the 1960s anthropologist and ethnographer Marshall Sahlins first suggested the idea that these were in fact the first affluent societies, because they were able to enjoy the luxury of all needs regularly met. Sahlins argued that these people worked a three- to five-hour day.[3] His ideas have come under much scrutiny by others in the field in the decades since then, particularly the idea of 'affluence', but the estimated working day has not changed all that much, only rising in more recent estimates to about six hours.[4] (In our analogy, this is the working day that persisted until the last couple of characters of this article.)

The length of a working day never saw such sustained forensic inspection as it did in the legislation of the nineteenth century. Tens of bills were passed, sometimes several a year as the legislation coughed and sputtered its way onto the statute books, and it throws these hunter-gatherer numbers into sharp relief. The Cotton Mills and Factories Act of 1819 limited those between the ages of nine and sixteen to work a maximum of twelve hours a day — but this only affected the cotton industry. The Labour of Children in Factories Act of 1833, along with other similar Acts, attempted to limit child labour to a ten-hour day in all factories (mining and other work was still excluded, and many mill owners lobbied Parliament for its repeal). The Factories Act of 1844 attempted to extend the twelve-hour workday and night-working ban to women. The Factories Act of 1847 succeeded in enforcing a ten-hour working day for children. The legislation was slow and often unsuccessful and, as is the case more generally, it rarely heralded the end of the practices being outlawed, but rather their commonality and continuing omnipresence. John Fielden, an industrialist and a Radical MP for Oldham at the time, penned a pamphlet complaining of the lack of regulation in industry:

> We have never worked more than seventy-one hours a week before Sir JOHN HOBHOUSE'S Act was passed. We then came down to sixty-nine; and since Lord ALTHORP's Act was passed, in 1833, we have reduced the time of adults to sixty-seven and a half hours a week, and that of children under thirteen years of age to forty-eight hours in the week, though to do this latter has, I must admit, subjected us to much inconvenience.[5]

[3] Marshall Sahlins, 'Notes on the Original Affluent Society', in *Man the Hunter*, ed. by Richard B. Lee and Irven DeVore (New York: Aldine, 1968), pp. 85–89.
[4] See, for example, Lawrence H. Keeley, *War Before Civilization: The Myth of the Peaceful Savage* (Oxford: Oxford University Press, 1996).
[5] John Fielden, *The Curse of the Factory System* (London: Cobbett, 1836), pp. 34–35.

These two extremes reveal that with mechanization, the human relationship with the environment and the labour required to maintain it had clearly changed substantially between the plains and the factory floor (with the length of the working week more than doubling), but not for everyone. Greater wealth creates a greater dynamic for inequality.

Unequal workloads, early cities, and the specialization of labour

While inequalities existed in any group or tribe during the Pleistocene, it was during the Metropolitan Revolution, the time when the first cities rose out of settlements, that its dynamics are first amplified. Any reader of the ancient *Epic of Gilgamesh* could tell you that there were substantial differences in the relative wealth and power of the people of Uruk. The world depicted in the poem is a 'man's world'; earthly women are practically non-existent, presumably subordinated to the domestic sphere. The men are inclined to war and are praised for their inclinations — their strength is admired, as is their fighting ability. The world of King Gilgamesh is an urban society, reliant on food produced elsewhere and brought into the home. The city's 'working' class would have consisted of potters, blacksmiths, carpenters, brickmakers, taverners, fishermen, butchers, builders, weavers, prostitutes, basket makers, charioteers, and military men. The gender gap in early Mesopotamia was less pronounced than one might expect. Taverners and brewers were often women, and they mostly enjoyed equal rights under the law (though not access to education). Below the workers were the slaves: although owned by a master, many did similar work to those above them in the social strata, but were, of course, unpaid.

Here, the narrowing in the range and variety of labour (in comparison to the Palaeolithic human) comes from the fact that brickmakers stayed brickmakers, and so on. Their bodies invariably adapted to their mode of work, or they stopped doing it. If you do the kinds of manual work that your body can adapt to, then to paraphrase Dickens's Mr Micawber, 'result happiness'.[6] But in modern life we know that most work simply does not function this way, plagued as we are with back, neck, and shoulder pain, and repetitive strain injuries. If the chroniclers of the nineteenth-century working body are to be believed, repair rarely met demand and, in most cases, shrank due to malnourishment and their bodies' perceived stress within its environment.

[6] Charles Dickens, *David Copperfield*, ed. by Jeremy Tambling (London: Penguin, 1996), p. 186.

Everything needs to move

Inevitably, any kind of life that is nomadic involves regular movement. We only evolved brains because we move. Plants, capable of photosynthesis (their ability to make sugar from carbon dioxide, water, and sunlight with the help of some enzymes and nutrients drawn to their roots as they hydrate), have no need to move in order to eat. In humans, movement is soft- and hard-wired into our bodies and brains so that we may be rewarded in ways as complex and varied as they are necessary. As soon as a nomadic group becomes a settling one, or a permanent city with walls built around it, opportunities for movement become more limited, and the manner of movement within those city walls, and later within the walls of factories, also fundamentally changes.

The kinds of manual work carried out on the grasslands of Mesopotamia in prehistory are not all that different to the farming practices of medieval Europe. One worker of the land would recognize the labour of the other. But take that Chaldean farmhand a little further forward in time and s/he would have no idea how to handle a spinning jenny or a screw-cutting lathe. And perhaps one of the key differences between the two modes of work is that one requires all the joints of the body to move, while the other, very few.

The ways in which we work in and with the environment fundamentally changes in the nineteenth century as people increasingly turn towards more mechanized labour practices. That change in the ecology of work writes with verbosity on the Victorian body. Any number of examples would legibly bring into bristling focus how their modes of living, their work, or their lack of it, imposed changes upon their physiology, their ability to breathe, their mental health, or any number of environmental pathologies. Some pathologies are specific to the Victorians (like a sudden drop in average height), but others are those of which we are the keen inheritors, such as chronic back pain and work-related disability.

The incredible shrinking class

Forty thousand years ago, fossil remains of Europeans show an average height of about six feet. Once the agricultural diet arrived, humans shrank (to an average of five feet four inches for males).[7] Height is, genetically at least, quite straightforward: approximately 80 per cent of it is determined by DNA. The other 20 per cent is determined by environmental factors, whereby the right kinds of sustenance consumed during the right moments of development will determine the outcome. If the body of someone who

[7] Michael Hermanussen, 'Stature of Early Europeans', *Hormones*, 2 (2003), 175–78.

is genetically inclined to be six feet tall finds an environment of sparsity, then growth will be inhibited as a kind of genetic safety measure.

Epigenetics (the study of the ways in which genes are expressed) suggests that the restriction of growth can then be passed onto offspring whereby some genes coding for height are switched off. This is thought to be another evolutionary fail-safe: a smaller body means a lower metabolism and is therefore more likely to succeed in nutritionally less abundant environments. Agriculture threw our ecology out of balance; this attested by the fact that thousands of years later diet had only improved marginally, resulting in a European male a whole inch taller than his Palaeolithic forebears. But with the ramping up of industry in the nineteenth century, the bodies of the working classes shrank massively.

Charles Wing, surgeon to the Metropolitan Hospital for Children and author of *Evils of the Factory System: Demonstrated by Parliamentary Evidence* (1837) reported the average height of 13-year-old factory workers as 4 ft 4½ in. A mass observation by surgeons in 1836 and 1837 reported that 14-year-olds averaged 4 ft 7½ in. (an inch shorter than their rural counterparts).[8] James Harrison, a surgeon in Preston, found in 1836 a mean height of 5 ft among 159 of the 17- and 18-year-olds that he measured.[9] The average 15-year-old male in Britain today is a giant by comparison to these workers, at 5 ft 8 in.

The beginnings of back pain

As cotton reamed from the factories, this new ecology of labour was also in the throes of making new bodies, shaped by the new kinds of work that those bodies were required to fulfil. Bodies were not only shorter, but also mangled by labour so squalid and offensive to their biomechanics as to permanently leave its mark upon them. One such example might be seen in the emerging concerns with and interest in the biomechanics of back pain.

Evidence of back pain does not really exist in cultures that precede the Victorians: it seems to require sedentariness for its expression. Edward W. Duffin's *On Deformities of the Spine*, which first appeared, rather heavily trailed in the press, in 1848, is a broad and intelligent study of the spine that

[8] *Arrangement of the Papers Printed by Order of the House of Commons, Session 1837*, 54 vols (London: [n. pub.], 1837), I: *Accounts and Papers: Trade and Navigation, Factories, Post Office, etc*., 82–83.

[9] Roderick Floud and Bernard Harris, 'Health, Height, and Welfare: Britain, 1700–1980', in *Health and Welfare During Industrialization*, ed. by Richard H. Steckel and Roderick Floud (Chicago: University of Chicago Press, 1997), pp. 91–126; and Peter Kirby, *Child Workers and Industrial Health in Britain, 1780–1850* (Woodbridge: Boydell Press, 2013), p. 112.

draws together much contemporary mid-century debate on the subject. It also contains those two necessaries for any health book: advice that puts the onus for pathology on the individual, and a machine to help cure it.

In the first instance, there is a wonderful illustration of two girls working at their desks (*Fig. 1*) (calling to mind Augustus Egg's *The Travelling Companions* (1862) — same figure, different behaviours (*Fig. 2*)). The girl on the left in the illustration, Duffin explains, is in the process of damaging her spine from 'a bad position habitually assumed whilst engaged in writing'. The second shows how the use of something so simple as a wedge can straighten her up:

> A momentary glance at the woodcuts, will suffice to illustrate the bad consequences that might result to a girl somewhat crooked, whose mode of sitting, whilst engaged at her ordinary studies, is not carefully tended to: and the facility with which these might be counteracted is equally exemplified.[10]

For those that struggle with similar complaints, Duffin recommends lateral exercises as:

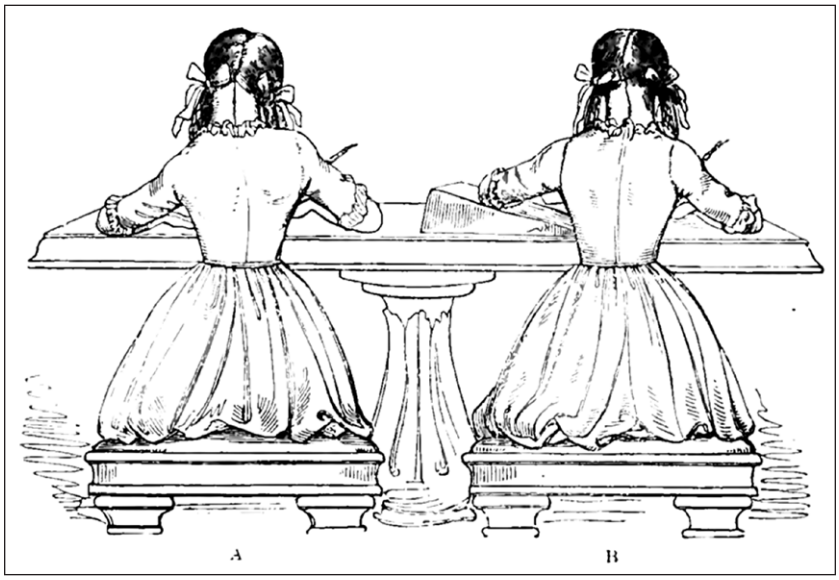

Fig. 1: Edward W. Duffin, *On Deformities of the Spine* (London: Churchill, 1848), p. 114. Wellcome Library. CC BY 4.0.

[10] Edward W. Duffin, *On Deformities of the Spine* (London: Churchill, 1848), p. 114.

Fig. 2: Augustus Leopold Egg, *The Travelling Companions*, 1862, oil on canvas. Birmingham Museums Trust.

Fig. 3: Edward W. Duffin, *On Deformities of the Spine* (London: Churchill, 1848), p. 125. Wellcome Library. CC BY 4.0.

> A mode of using the spinal muscles generally too much overlooked [...]. For such purpose, I have been in the habit of recommending a frame somewhat like the one which a rocking horse stands [*Fig. 3*], but rather more acute in the curve, and having the ends turned inwards. (pp. 124–25)

Here are the beginnings of a more modern concern and interest in back pain that has been exacerbated as our own ecology of labour has shifted to become ever more sedentary (it now affects over 80 per cent of all adults during their lifetime). Back pain is downgraded here, as it often is today, to a personal fault in which 'bad habits' have caused pathology, rather than modes of work or leisure that are culturally pervasive and all but inescapable.

Bad knees and new bodies from new modes of work

Although there were several chroniclers of new modes of work and the toll it took on the bodies of the workers (Friedrich Engels's *The Condition of the Working Class in England* (1845) is perhaps the most famous), William Dodd is one of a few workers who recounted his experiences first-hand. Thanks to an aristocratic patron, he later went on to become a full-time writer, but Dodd's earliest work was an autobiography, *A Narrative of the Experience and Sufferings of William Dodd, a Factory Cripple* (1841).

Dodd began work, he tells us in his *Narrative*, at the age of six, and by his teens was already disabled by it:

> My joints were then like so many rusty hinges, that had laid by for years. I had to get up an hour earlier, and, with the broom under one arm as a crutch, and a stick in my hand, walk over the house till I had got my joints into working order![11]

After this disastrous start in life, Dodd became a sort of chronicler of factory workers: he travelled about the country reporting on conditions in various districts. Later, in 1847, he published a series of letters reporting on conditions in factories and among the labour force, titled *The Labouring Classes of England*. It is not the easiest read. The first chapter returns to his own story of being set to work as a child, and recounts how, before the age of ten, his sixty-hour working week had begun to take its toll on his body. The human body is not functionally capable of standing in one place for extended periods: joints are like the hinges on doors, they are only there because movement is required; their function is not the provision of static support. Dodd explains:

[11] William Dodd, *A Narrative of the Experience and Sufferings of William Dodd, a Factory Cripple*, 2nd edn (London: Seeley, 1841), p. 13.

> His knees gave way and gradually sunk inwards till they touched each other, thus forming a kind of arch for the support of the body. At 12 years of age the easiest position in which he could stand, was with his feet about 10 or 12 inches apart, his knees resting as above, with the centre of gravity crossing the thigh and leg bones and falling within the feet.[12]

This description is not unlike the frontispiece illustration to Duffin's book on the spine (*Fig. 4*). Dodd goes on to recount a couple of near-death accidents from being caught in machinery, and the actual deaths of some of his colleagues. Such were the rewards of factory labour.

To illustrate some of these contrasts and similarities between manual labour, machine labour, and the kinds of mental labour only beginning to express itself in the period, it is useful to look at Ford Madox Brown's *Work* (*Fig. 5*). He began painting it in 1852, but it took him eleven years to complete (and when he did, there were two versions). Set on a Hampstead side street, it is a painting in which all of London is present, and one that attempts to capture both the variety and character of labour as it presented

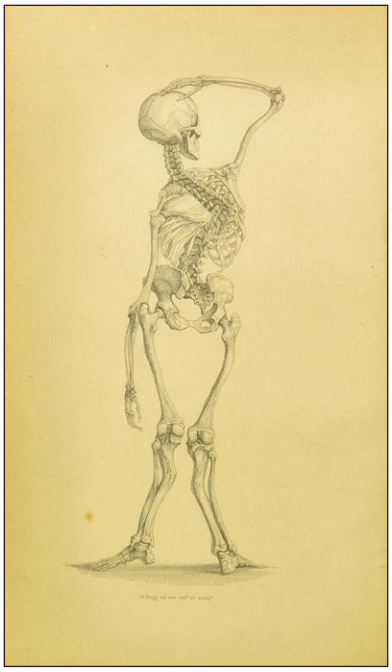

Fig. 4: Edward W. Duffin, *On Deformities of the Spine* (London: Churchill, 1848), frontispiece. Wellcome Library. CC BY 4.0.

[12] [William Dodd], *The Laboring Classes of England* (Boston: Putnam, 1847), p. 16.

Fig. 5: Ford Madox Brown, *Work*, 1863, oil on canvas, Birmingham Museums and Art Gallery. Google Art Project.

itself to the Victorian consciousness. The painting seems to borrow some of the spirit of Hogarth but without the anarchy. The hero of this painting, just off-centre, is a manual labourer, working the road in the blazing sun. He is a figure we are meant to admire. About him, at the far right, are representative intellectual labourers of the period, F. D. Maurice and Thomas Carlyle. These characters are depicted as being peripheral to the life of the street and to the London that has been built around them. Their work is to watch and reflect, not to do.

On the one hand, it is an uncompromising painting that puts the working man at the heart of Britain's success and greatness when the nation was at the height of its economic power in the 1850s. On the other, it seems a hopeless romanticizing of the kind of work that destroyed people just like this. The painting is radically political in the ways it seeks to put working-class life at the centre of the frame (with the well heeled quite literally in the shade), but it is also a sort of fantasy of working life that could only be dreamed up by a man who has never wielded a pickaxe so that he may buy a loaf of bread. And, of course, most workers were not outside in the sun, but in factories, breathing cotton dust and drinking beer because it was cleaner than water and more freely available; and their knees, like Dodd's, were buckling from vitamin D deficiency.

The knock-kneed were a common sight in the nineteenth century. In the chapter on 'Factory Hands' in *The Condition of the Working Class in England*, Engels observed that 'the knees were bent inward, the ligaments

very often relaxed and enfeebled'.[13] Much later, observing 'The Mining Proletariat', he noticed:

> Distortions of the legs, knees bent inwards and feet bent outwards [...] and they are so frequent that in Yorkshire and Lancashire, as in Northumberland and Durham, the assertion is made by many witnesses, not only by physicians, that a miner may be recognized by his shape among a hundred persons. (p. 202)

George Eliot, who grew up in Nuneaton, then a small town in Warwickshire, saw about her a number of mining and factory workers. Much of her fiction concerns itself with this world in process between the rural and the urban. Years later, when writing the 'Introduction' to *Felix Holt, the Radical* (1866) she drew on her memories of the people of her childhood:

> Here were powerful men walking queerly with knees bent outward from squatting in the mine, going home to throw themselves down in their blackened flannel and sleep through the daylight, then rise and spend much of their high wages at the ale-house with their fellows of the Benefit Club.[14]

In the nineteenth century, just as for these fictional miners, the most common disease of the bones was rickets: a skeletal disorder that causes the softening and weakening of bones either through a diet deficient in calcium and/or vitamin D (the latter promotes the absorption of calcium and phosphorus in the diet), or through individuals receiving insufficient sunlight due to spending the night toiling for coal and the day sleeping in recovery from it (which leads to the same deficiency of vitamin D). Peter Gaskell, another chronicler of the working anatomy, also eyed bony bodies of the working classes in *The Manufacturing Population of England, Its Moral, Social, and Physical Conditions, and the Changes Which Have Arisen from the Uses of Steam Machinery* (1833). He found a 'very general bowing of the legs', and in infants he observed 'many with limbs bent' and all riddled with rickets.[15]

Legs collapsing under the moderate weight of a torso become the very essence of the Anthropocene body, being both biomechanical symptoms and problems derived from the sourcing of fossil fuels. On the one

[13] Friedrich Engels, *The Condition of the Working Class in England*, ed. by Victor Kiernan, intr. by Tristram Hunt (London: Penguin, 2009), p. 124.
[14] George Eliot, *Felix Holt, the Radical*, ed. by Lynda Mugglestone (London: Penguin, 1995), p. 6.
[15] Peter Gaskell, *The Manufacturing Population of England, Its Moral, Social, and Physical Conditions, and the Changes Which Have Arisen from the Uses of Steam Machinery* (London: Baldwin and Cradock, 1833), pp. 162, 208.

hand, greenhouse gases produced by the burning of fossil fuels are having a tremendous impact on climate change across the planet; on the other, the modes of extraction used to access the fuel meant that the bodies of mineworkers were bent and bowed because their labour was needed to fire the furnaces of the Industrial Revolution.

Madox Brown's *Work* is an exercise in expressing the ecology of labour. Its setting and the interrelations that exist within it are as complex as the greenery on the bank of John Everett Millais's *Ophelia* (1851–52). Madox Brown tried to convey the dynamics and variety of a working life and, in the burgeoning knowledge economy of the twenty-first century, we are the progeny of Maurice and Carlyle as similarly sedentary knowledge workers. Like Augustus Egg's *The Travelling Companions*, which can be said to depict mirrored versions of the same young woman, one of whom is inclined to industry, and the other to idleness, in *Work* one of the things we might see is a similar parable. But instead of only illustrating the range of work that takes place throughout mid-Victorian Britain as an ecological balance leading to a stratospheric gross domestic product, it also suggests the range of work that should exist within an individual: a variety of work performed throughout the whole of a single body.

The range and balance of labour changed beyond recognition in the nineteenth century, and the story of how the bodies of those in the twentieth and twenty-first centuries continued that change is part of a larger story. Our bodies, all of them, are always trying to find a balance between what they are and how they can best function in their given environment, whether it is one built by humans or not. When worked, the body tries to adjust to the change, but when demand outstrips the ability to repair and adapt, fatigue, injury, then pathology, and finally, morbidity ensues. Today, thanks to the mass of factory legislation that began in the nineteenth century, our places of work are cleaner and safer, but the Victorian working class cast a long misshapen shadow, and like them we still work far too much, in ways that lead to even more pathologies. We trade our labour on the job market often unaware that what we are really dealing in is our bodies, their longevity, and their functionality.

In these few examples, the environmental crisis that we see presaged in Victorian literature, art, science, and culture is played out on an equally complex canvas: the human body. Today we remain in that struggle to make sense of the impact of how our work practices changed and how they continue to do so. Our ecology of labour shifted drastically during the nineteenth century and it has continued apace with new modes of work emerging every few decades. In the meantime, our bodies and our genes are struggling to make sense of these new places and new ways of being: they try to adapt, and when they cannot, their symptoms speak with astounding articulacy.