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Arabella Buckley and the Feminization of Evolution as a Communication Strategy

By **Richard Somerset**, Nancy-Université

<1>Imagine that you have just awoken from a deep sleep to find yourself in an unexpected and unfamiliar place. Wanting to know more, you look around carefully and find

a round dome-covered hall, in the floor of which is a trap-door, out of which open five stately arched corridors, which begin as lofty galleries and end in a point where a tiny window is set. The roof and the corridors are built of delicate white columns and arches of lime, joined by soft ligaments, while the walls are inlaid with star-like plates, and within the dome, and stretching out into each corridor, lies ...

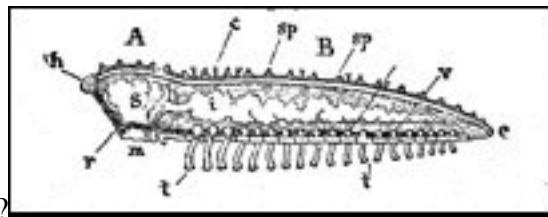
Have you been transported to an exotic palace of some sort? Oriental, perhaps? But let's keep looking and not jump to conclusions just yet.

... lies the soft body of the animal, with its digestive organs.

Ah. So this isn't a real palace; in fact you are inside the body of an animal of some sort. Let's carry on and try to guess what animal it is.

The delicate telegraph of nerves, and the water canal, starting from the central hall, pass like the wires and pipes of our houses under the floor of each corridor, while the numberless little waterbags which move the regiment of feet pierce the floor, and lie in the corridor itself.

It might help to look at this diagram. You can see the central hall, marked "A", and one of the corridors, "B", with the soft body inside (i); also the trapdoor (m), the window (e), the feet (t), and, just above, the telegraph of nerves.



So where are we, then?

Top marks if you got *starfish*.

<2>The extract we have been looking at, as well as the illustration, appear in *Life and Her Children*, published by Arabella Buckley in 1880 (85-86).(1) It was her third book, and the first to be devoted purely to the exploration of the forms of living things in the natural world. It offered an extended survey of the six divisions of invertebrate life, and would be followed two years later by a sort of sequel, *Winners in Life's Race*, devoted to the vertebrates. In both of these books Buckley made every effort to promote a certain kind of attitude, as we have already had a chance to glimpse in the starfish passage just cited. In all her popularising work, in fact, Buckley never stinted in her efforts to encourage children to associate learning with observation, and both of these with healthy, profitable and enjoyable outdoor activity. A reviewer of *Life and Her Children* writing in *Nature* admired the book for “the truly philosophic glow which lights up every page” (E.P.W. 123).

<3>This outlook may come as something of a surprise to those who take Dickens' caricatural school teacher Thomas Gradgrind as the benchmark of Victorian pedagogy, but Buckley was actually working on the basis of an existing tradition, of which the starfish passage is in many ways typical. One feature of this tradition is the deployment of telling analogies connecting the natural world to the more familiar world of human construction: it is exemplified in Buckley's starfish passage by the extended architectural motif. Another is the appeal to the senses, particularly the visual. Although we are reading a book, every effort is made to create the impression that we are really looking directly at the natural world, and exploring it ourselves: we are not told by an expert how a starfish is constructed, but invited by a guide to inspect and discover its anatomy. Another typical device derives from the stringing together of 'visual experiences' into a consecutive narrative. The book as a whole is not intended to be an encyclopaedic gathering of facts, but a sort of virtual journey through each part of the natural world, permitting us to build familiarity as we progress. This 'journey' actually has a dual pedagogical function, since that which we stand to learn will be not only external and objective but also internal and subjective: we will learn about the ways of the natural world, but we will also acquire skills and insights that will improve us as moral beings.

<4>These techniques were consciously used by Buckley as part of a deliberate strategy for promoting the study of natural science among children, and in *The Fairyland of Science* (1879), one of her first and most successful books, she sets out the agenda plainly enough, even though she uses the metaphorical language esteemed attractive to children. Comparing the workings of Nature to that of invisible fairies, perceptible only to suitably attuned sensibilities, Buckley explains to her young audience that the key to nature studies is the apprenticeship of the senses. They are not learning facts so much as an attitude.

Now, exactly all this which is true of the fairies of our childhood is true too of the fairies of science. There are forces around us, and among us, which I shall ask you to allow me to call fairies, and these are ten thousand times more wonderful, more magical, and more beautiful in their work than those of the old fairy tales. [...]

There is only one gift we must have before we can learn to know [the fairies of nature] – we must have imagination. I do not mean mere fancy, which creates unreal images and impossible monsters, but imagination, the power of making pictures or images in our mind, of that which is, though it is invisible to us. ... If you have this gift of imagination, come with me, and in these lectures we will look for the invisible fairies of nature. [...]

How are you to enter the fairyland of science?

There is but one way. Like the knight or peasant in the fairy tales, you must open your eyes. There is no lack of objects, everything around you will tell some history if touched with the magic wand of imagination. [...] The fire in the grate, the lamp by the bedside, the water in the tumbler, the fly on the ceiling above, the flower in the vase on the table, anything, everything, has its history and can reveal to us nature's invisible fairies.

Only you must wish to see them. If you go through the world looking upon everything only as so much to eat, to drink, or to use, you will never see the fairies of science. But if you ask yourself why things happen, and how the great God above us has made and governs this world of ours; if you listen to the wind, and care to know why it blows, ... then you will learn to know and love these fairies (14, 15, 21, 22)..

Buckley's mission is the *enchantment* of science. The natural world, properly apprehended, is full of wonders; and the realisation of that fact reconciles us both with knowledge and with the world. Knowing nature, we know ourselves, and are proud to take on the responsibility that falls to us as the highest beings in Nature's manifold creation. It is interesting to note that although this reconciliation originates with knowledge, it is actuated by sentiment – by the feeling of a direct bond with the rest of nature. In this respect, there is a close conceptual bond to the Romanticism of Wordsworth or Coleridge, particularly since Buckley's recommended site for the re-enchantment process is outdoors, face to face with nature.

<5>Such an association might seem surprising, especially when we bear in mind Romanticism's inherent suspicion of the natural sciences. The fact is that the Romantics' effort to redeem Man's soul from the mechanising clutches of the Enlightenment had become so thoroughly integrated as to become a commonplace of Victorian ethics, and was routinely displayed by mainstream writers and novelists such as Thomas Carlyle or Charles Dickens. British natural science therefore sought to rid itself of potentially damaging associations with materialism and mechanistic philosophies, and by the end of the century, this value system had become so pervasive that the promoters of Science were more or less obliged to find ways of selling their goods in essentially moral terms. This is why we find Buckley assuring her readers that learning science, if only we do it according to the proper method, will not only make us wise and knowledgeable, but strong and good too.

<6>This technique for the promotion of science did not appear overnight, nor can its development be attributed entirely to Buckley or her immediate contemporaries. One important earlier source is to be found in the popular science work of the Anglican churchman Charles Kingsley starting in the 1850s, and which can be associated with the broader programme of his

“muscular Christianity”. For example, in *Glaucus or the Wonders of the Shore* (1855) – a book which was largely responsible for creating the mid-Victorian craze for naturalising – Kingsley mounted a concerted campaign in favour of the methodical study of nature as a course of education for the general public. Imagining a bored family engaged in the annual ritual of a seaside holiday, Kingsley waxed lyrical on the forgotten riches that lay under their very feet, ready to yield up days of charming and fascinating occupation, if only they knew what they were looking at. It was a cheerful and chatty handbook designed to help such humdrum families transform themselves from listless holidaymakers into active beachcombers and amateur naturalists.

<7>In the long introductory passage preceding the practical ‘handbook’ section of *Glaucus*, Kingsley developed his view that the practice of natural science was important not only for the intrinsic value of the knowledge that stood to be gained, but also for the moral qualities that the learning process would impart to the learner. The critical skill is “the Art of Seeing”; a skill which is not to be learned from books, but only by practice, in the field. What is more, it is in that same field that the young naturalist will best acquire the full range of virtues that will make him a Man; the modern equivalent of – nothing less – the chivalrous knight errant of yore!

[The Art of Seeing] is God’s gift wheresoever educated; but its true school-room is the camp and the ocean, the prairie and the forest; active, self-helping life, which can grapple with Nature herself: not merely with printed books about her. Let no one think that this same Natural History is a pursuit fitted only for effeminate or pedantic men. I should say, rather, that the qualifications required for a perfect naturalist are as many and as lofty as were required, by old chivalrous writers, for the perfect knight-errant of the Middle Ages: for (to sketch an ideal, of which I am happy to say our race now affords many a fair realization) our perfect naturalist should be strong in body; able to haul a dredge, climb a rock, turn a boulder, walk all day, uncertain where he shall eat or rest; ready to face sun and rain, wind and frost, and to eat or drink thankfully anything, however coarse or meagre; he should know how to swim for his life, to pull an oar, sail a boat, and ride the first horse which comes to hand; and, finally, he should be a thoroughly good shot, and a skilful fisherman; and, if he go far abroad, be able on occasion to fight for his life.

For his moral character, he must, like a knight of old, be first of all gentle and courteous, ready and able to ingratiate himself with the poor, the ignorant, and the savage ...

And last, but not least, the perfect naturalist should have in him the very essence of true chivalry, namely self-devotion; the desire to advance, not himself and his own fame or wealth, but knowledge and mankind (43-44).

For Kingsley, then, there is no question of natural science turning its adepts into *effeminate* men; on the contrary, they will have to be exceptionally active. In fact the practice of natural science turns out, somewhat unexpectedly, to be the best school for the production of young men endowed with all the virile qualities. That is of course the point of the analogy with medieval chivalry. It is also worth pointing out the significance of the moral quality of “self-devotion” mentioned in the final paragraph of the cited passage. The virile activism of the modern knight

errant is not to be expended in an egotistic search for personal glory, but devoted to the collective glory of his extended family. It is not hard to see the attraction of this schema in the context of an emergent empire that sought to attribute itself both military and moral ascendancy. Kingsley's muscular Christianity started with the independently-minded exploration of the natural world and from thence extended effortlessly to the expansion of empire through the virile domination of territory and the moral mastery of races.

<8>Buckley's pedagogical orientation, insisting on first-hand observation and investigation, and on the moral attributes to be acquired as a result, is obviously at least partly inspired by Kingsley's example; however, there would be substantial innovations too. Where Kingsley constructed an expository argument in defence of the discipline of natural history and its capacity to promote the virile virtues, Buckley would produce a narrative that internalised and naturalised the lessons to be learned from nature, and balanced the virile virtues of activism with the feminine qualities of devotion. This morally balanced package proved highly effective in reconciling the Victorian middle classes to the study of the natural sciences. Buckley was even able, without openly advertising the fact, to promote an evolutionary outlook amongst her readers. In the following pages we will attempt to outline how her system worked.

<9>Arabella Buckley's scientific credentials were gained by direct contact with the preeminent naturalists of her day, thanks to a period of employment as Charles Lyell's personal secretary from 1864 until the geologist's death in 1875. Then, at the age of thirty-five, she found herself out of a job and unmarried, so she turned to lecturing and publishing, presumably at least partly for financial reasons. Her first successful book, *The Fairyland of Science* (1879), was a rewritten lecture series. The next two titles, perhaps Buckley's most innovative, are the ones we will concentrate on here. *Life and Her Children* (1880) and *Winners in Life's Race* (1882) together presented a complete survey of animal types and, despite a certain paucity of reference to extinct species of the geological past, a 'history of Life', since Buckley found ways of insinuating historical pattern into typological pattern. By thus blurring typology and chronology, Buckley was able to hint at an underlying dynamic of natural becoming without having to go into the technicalities of the process itself; in other words, she was able to promote what would pass for a Darwinian outlook without having to deal with specifically Darwinian mechanisms such as natural selection. So, rather than engaging in a complex technical argument, Buckley deployed the resources of narrative; and by telling a story whose central narrative thrust is characterised by the progressive crossing of typological barriers, was able to build up in her readers' minds a picture of Nature not as a fixed set of taxonomical relations, but as an ongoing process of emergence. I have dealt elsewhere with a broad range of Buckley's 'barrier crossing' narrative devices,(2) so I propose to limit our purview here to the specific question of the leading metaphors and their contribution to that dynamic.

<10>Buckley's leading metaphors are neatly contained in the relevant titles: *Life and her Children*, and *Winners in Life's Race*. These are not clearly distinguished metaphors, but multi-layered and mutually dependent metaphor-complexes. Nevertheless, each has its own distinct centre, the one being anchored in the nurturing world of the mother-child relationship and the other in the competitive world of the running race. Both sets of metaphors recur throughout the two books, but it is the mother-child theme that predominates at first. Its central task is to set out

the nature of the field of study, and particularly to transform the soulless taxonomical scale of the naturalists into a family relationship: typological difference is not to be seen as a merely mechanical measure that allows the place of each species to be 'plotted' in the universal scheme of things; it is more like the difference that allows each individual to find his proper place within an extended family.

<11>The effect of the mother-child metaphor-complex is thus twofold. First of all, it creates the expectation of continuity within the animal world. If types are the "children" of a common mother called "Life", then we are all part of the same family, and whatever discontinuities may exist between certain 'children', the overall continuity guaranteed by common derivation from a unique "mother" is of course stronger. So although our story must deal with specific differences, these are always overarched by a wider generic similitude. But at the same time, species do not only have an 'upward' relationship to the generating Mother; they also have a 'sideways' relationship to the other types or species who, in virtue of the shared relation to the common mother, become something like siblings to one another. By then treating some of the siblings as 'older' than the others, Buckley is able to suggest that there is a kind of chronological succession among types, structured like a relay race. Thus the second main function of the mother-child metaphor-complex is to instil a sense of order or hierarchy in Nature's family, assimilated to sibling seniority.

<12>The relay metaphor, for its part, helps to build on the sibling relationship already initiated by the mother-child complex, and it serves most obviously as a way of attributing to each type of living thing its distinctive chapter in the grand narrative. The simpler sorts come in early on, run their part of the race, and then hand the baton on to the next runner, a higher being, whose task it is to carry it on for a while before being superseded in turn. Life is the baton itself, or a torch, carried on by successive siblings, each of whom thus makes his distinctive contribution to the glory of the grand narrative. These stages of the story are routinely called "lessons": each 'child' has a new lesson to learn and the capacities thus acquired are then bequeathed to the family as a whole at the passing on of the baton. The next 'child', benefitting from the legacy, will now be able to face tougher tests, and to acquire higher skills. 'Younger' siblings are thus replaced by increasingly competent 'older' siblings. The younger, or more primitive, have their moment of glory, but are ultimately side-lined once their characteristic acquisitions have become banal. In this way, a narrative of chronological becoming is drawn out of a purely typological or hierarchical series. However, the historicity of that narrative is blatantly compromised by the fact that the 'children' in question are in fact more like distant cousins than siblings, and, even more obviously, by the fact that in normal families it should be the first-born who qualifies as the eldest.

<13>While Buckley did not broach the subject of Darwinian dynamics in theoretical terms, her narrative had to take account of the key features of that model. The most challenging notion here is that of competition. On the one hand, competition is the motor of progress, but on the other hand, it must not be allowed to interfere with the loving mother-child relationship. Buckley deals with the problem via the 'race' metaphor we have already mentioned, which is domesticated by bringing it within the orbit of educational concerns. Competition becomes 'safe' if it can be

presented as pedagogically advantageous – the sort of thing even a loving mother would approve of:

If every man had all he required, and could live comfortably, and bring up his children to enjoy life without working for it, do you think people would take such trouble to learn trades and professions, and to improve themselves so as to be more able than others? ... And so it is with plants and animals. *Life has to educate all her children*, and she does it by giving the prize of success, health, strength and enjoyment to those who can best fight the battle of existence, and do their best work in the world (*Life* 5-6; emphasis added).

In a passage such as the one just cited, the negotiation of the relationship between mother and children is also important for the mapping out of the implicit power structures of Buckley's scheme. We see the unitary 'mother' giving form to the field of 'children', thus establishing the basic dynamics of the natural world: the children are produced by the mother and 'placed' in a natural order of things according to their performance in the task she sets them, which is to do work in the world. Authority is applied from above, and gives structure to the whole. But at other moments the opposite dynamic is suggested. In a passage in which Buckley tells her readers that the world is fantastically full of natural variety of living things, she cites as initial explanation the familiar injunction of God that the animals should "multiply and replenish the earth"; but then reinterprets this in her own naturalistic terms, as "*the invisible mother ever taking shape in her children.*" (4, emphasis added). So here it is not the mother forming the children, but just the reverse: the children forming the mother. We thus have maternal authority providing structure from the top down, and the earnest work of the 'children' providing the motor for improvement by effort 'from below'. The underlying story is one of life forms spontaneously working their way into an ordered hierarchy. The power structure is typically Victorian, balancing the risky freedom of movement at the base of the hierarchy with a reassuring stabilising logic emanating from above.

<14>So far we have concentrated on the general features of Buckley's narrative framework, but we also need to consider the detail of its construction. *Life and Her Children* tells the story of the development of the six invertebrate divisions, and the leading metaphors already mentioned are used to flesh out a suggestively progressive narrative dynamic. It will be useful to look at how such devices are used to invest the empirical story of *Life* with the appropriate ideological resonances.

<15>Starting 'at the bottom', then, Buckley invites us to admire the simplest animals, such as the corals, for their construction skills. The sponges are then presented as having "learnt the secret of the division of labour" (42), as can be seen from the fact that they have specialised body parts. This is a 'lesson' of such significance that it forms the basis on which all the coming innovations will be based: in Buckley's words, "... we see that these animals have made a great step never again to be forgotten by the children of Life" (42). The next division, the radiata, bring to the slowly expanding family of living things the new skill of walking. And while radiated animals such as the starfish might not seem to be as good walkers as other higher animals, we must nevertheless recognise that its relatively lowly skills were well adapted to its relatively lowly lifestyle, none of which should prevent us from valuing the contribution they made. "Our first

walking animal [the starfish] then is by no means a poor or feeble creature ... We can see that his powers of living satisfactorily are very great” (89). The molluscs then bring the capacity to breathe air. Pausing at this stage to recapitulate, Buckley makes sure that we understand the progress of Life as resulting from a collective effort: “One marked step we have made in [the radiated animals] – we have advanced from mere floating or fixed animals to creatures able to wander freely over the floor of the ocean. The children of life have now got their feet upon the ground, but not yet their heads above water” (102). This prepares us for the next stage of the saga: “Soon a new prospect opens before us, and in the mollusc or soft-bodied animals, and the worms, we shall begin to enter upon earth-life. Not suddenly, however, for all new powers are of slow growth, and through many chapters yet we shall find the largest number of each group clinging to their old ocean home, and only here and there air-breathing and head-crowned forms mingling in the throng” (102).

<16>In these first stages we can already clearly make out the ‘evolutionary’ dynamics of Buckley’s narrative. Each stage of the story is marked by a technical gain, and while the mechanics of the transition from one stage to the next are sidelined by the language of observation (“a new prospect opens before us”), considerable stress is nevertheless laid on the claim that this is not a sudden change but a slow organic process, comparable to the process of learning in a human individual (“Not suddenly, however, for all new powers are of slow growth...”). The difficulty of learning is even invoked, indirectly, as an explanation for the awkward fact that plenty of animals do not seem capable of making the move to higher and better things suggested by the central narrative thrust. Buckley’s readers would easily have recognised the schoolroom dunces who never advanced beyond the first or the second form. In any case, the educational metaphor is highly effective in the further historicisation of the relationship between types, in pursuance of the basic outline already established by the hierarchical distinction between younger and elder ‘siblings’.

<17>The worms are the next group to be considered, and they are associated with what will be a key quality for Buckley: that of activism. Once again, the new class is introduced with a useful résumé of the path covered so far:

In each of our groups of animal life we have found some special advantage which has enabled them to spread their children over the world; the sponges had their co-operative life and their protecting skeletons, the lasso-throwers [jellyfish etc] their poisonous weapons, the prickly-skinned animals their tube feet and stony casing, the mollusca their wonder-working mantle, but among them all we have not yet met with that power of moving quickly, without which no creature is ever very intelligent. ... It is clear that the power of getting quickly over the ground must be an advantage in the struggle for life, and we shall see that it is this power and the intelligence accompanying it which has raised the most advanced animals in the sixth division to such a high position as that of the bee and the ant.(142).

And in the same passage, the gradual nature of transitions is stressed, again via the analogy of the lesson slowly learned: “Nothing, however, is learnt in a moment, and therefore you must not be surprised that the worm and the leech, which you would probably think rather slow animals, are the first examples of the more active creatures” (142). Here too we see the characteristic

difficulty of the evolutionary narrative, which involves the author in an awkward transition from one static condition to another, often without the help of intermediary types: hence Buckley's efforts to incorporate worms into the next stage of her evolutive series, that of the "active animals". They are effectively presented as 'transition beings' placed on the boundary separating sluggish younger siblings from more active elder siblings in Life's great family, and their role is to supply the 'bridge' between the two states. Using Buckley's language, we might say that they represent the early stages of Life's attempts to learn to be more active. That the worm as a type thus finds itself fixed in a permanently intermediate state is passed over in silence, since this fact tends to undercut the narrative's focalisation on (apparent) movement. In fact, the narrative is carried forward only by the series of 'lessons' learned by the successive 'siblings': it is 'Life' alone that actually changes, while the types themselves are left behind in her wake.

<18>The narrative-forming aptitude of Buckley's educational motif becomes particularly clear once we reach the higher echelons of invertebrate life. Thus the metamorphosing insects are siblings that are advanced enough to need several stages in their educational process. They "have learned to do one thing at a time", and must store up material for a long time before they can attain "a more perfect body" (235). And the highest invertebrates, the social insects, have to go through "a real babyhood" before they can attain the full complexity of their adult conditions. "As Life endows her children with more intelligence, with quicker brains governing active bodies, we find them becoming more and more dependent upon others in their infancy and youth" (266). The acquisition of a "babyhood" and an increased dependency on parents are probably not qualities normally associated with elder siblings, but the logic of the arrangement is clear if we understand how it fits with Buckley's version of the evolutionary narrative. By focusing on "babyhood" and on family ties, Buckley was seeking to highlight the primacy of the moral faculties in the working out of the evolutionary process: the babyhood of the highest invertebrates is read as a sign that Life has – already – made significant steps towards the acquisition of a moral sense.

<19>The same tendency is maintained and indeed amplified in the sequel volume, *Winners in Life's Race*, when Buckley comes to the vertebrates. In fact at this stage, the ideological agenda sometimes becomes so prevalent as to have a jarring impact upon the narrative, especially in the choice of vertebrate types whose place is to be highlighted. The most striking example is the birds. They are singled out for special treatment purely because they seem to be so much better at family life than the previous 'sibling', the reptiles:

The birds, with their feathery covering and powerful wings, have left their early friends, the reptiles, far far behind. Taught by their many dangers, many experiences, and many joys, they have become warmhearted, quickwitted, timid or bold, ferocious or cunning, deliberate as the rook, or passionate as the falcon, according to the life they have to lead; or, in the sweet tender emotions of the little song-birds, have learned to fill the world with love and brightness and song (179)

Conversely, other types of vertebrates are sidelined. This is most notably the case of the apes, who are treated rather disparagingly at an early stage of the story, *before* the chapter on the quadrupeds, herbivores and carnivores, which is entitled "The Large Milk-Givers which have

Conquered the earth by Strength and Intelligence.” Her comments on the gorilla are particularly revealing.

It is strange to picture to ourselves these huge apes, living in the depths of lonely forests and looking like human savages to those who can catch a glimpse of them ... We know very little of their daily life, ... But all that we do know teaches us that in their rough way they have developed into strangely man-like though savage creatures, while at the same time they are so brutal and so limited in their intelligence that we cannot but look upon them as degenerate animals, equal neither in beauty, strength, discernment, nor in any of the nobler qualities, to the faithful dog, the courageous lion, or the half-reasoning elephant (*Winners* 255).

Buckley had thus far accustomed her reader to a rather wide-eyed admiration even for the humblest of creatures, so it is distinctly odd here to find her criticising an animal for being “brutal” – in other words, for being an animal. But again the surprising epithet falls into place when we realise that the judgement is in fact a part of the wider narrative scheme. The ape is presented as a misfit that has abusively usurped a human-like form so that the author can exclude it from the core narrative of evolutionary development. It can then be replaced with alternative candidates selected for the exemplarity of their supposed moral attributes – the *faithful* dog, the *courageous* lion, and the *half-reasoning* elephant – despite the evident anatomical absurdities that result from this rearrangement.

<20>Buckley lets the absurdity pass because she has more to gain from suggesting that the evolutionary story of Life is directed, from an early stage, towards a moral finality. The displacement of the moral threshold back into the animal past, and the suggestion that evolution *is* the development of morality, were ways of defusing the notorious “monkey question” that had divided Anglo-American society since the publication of the *Descent of Man*, and to reconcile a wary middle-class readership with evolutionary thought. By making morality emerge from deep within the natural realm, Buckley was trying to paint material processes in moral colours. If Nature spontaneously tends towards the moral, then we have nothing to fear from evolution. In fact, as Buckley specifically argued in a late adult-oriented pamphlet, evolution can then even be taken as an empirical proof of the validity of those moral principles which were initially proposed only on the philosophically questionable basis of revelation.(3)

<21>The closing pages of *Winners in Life's Race* are the most theoretical, and it is here that Buckley is most explicit about the place she reserves for morality in her version of the story of evolution. Here she proposes to place “mutual help” at the core of the historical process of the development of life, an attitude which Barbara Gates has interpreted as an anticipation of Kropotkin.(4) The empirical basis for Buckley's claim derives from the observation that the stages of Life can be understood, as we have seen, as a “gradual education in duty to others.” Duty to others, or a moral sense, is thus not a recent addition to the natural talents of Life's children; instead, it “has been throughout a golden thread, strengthened by constant use in contending with the fiercer and more lawless instincts.” We can therefore conclude that

the beautiful virtue of self-devotion, one of the highest a man can practise, has its roots in the very existence of life upon the earth. [...] In the backboneed family it exists from the very first

as the tender love of mother for child, of the father for his mate and her young ones, and so upwards to the defence of the tender ones of the herd by the strong and well-armed elders, till it has found its highest development in man himself. [...] The great moral lesson taught at every step in the history of the animal world [is] that amidst toil and suffering, struggle and death, the supreme law of life is the law of SELF-DEVOTION AND LOVE (*Winners* 351-3).

Comparing this passage to that of Charles Kingsley with which we started, it will be obvious that Buckley both borrowed from and added to that tradition. Where we saw Kingsley citing “self-devotion” in an expository text as a key virile characteristic to be promoted by the practice of Natural History, Buckley has doubled up on the moral message, balancing virile activism with feminine devotion, and she has also integrated the whole into a naturalistic narrative where it is supposed to exemplify the natural order of things. Kingsley mounted a moral argument to defend Natural History as a discipline; Buckley is telling an empirical story whose dynamics allegedly demonstrate the ‘naturalness of morality’, thus finding a clever way of recasting evolutionary theory in a mould more likely to appeal to Victorian sensibilities. By integrating her moral claims into a narrative structure, Buckley produced texts of great structural ingenuity and persuasiveness.

<22>However, the technique is of questionable validity as the vehicle for the construction of a meaningful argument. Its characteristic logical problem is most evident in Buckley’s *ad hoc* foregrounding of birds and sidelining of apes in order to produce a storyline that suits her ideological goals. But of course, all the historical sciences are prey to this problem. It seems particularly prevalent in Buckley’s work only because of the extent to which she relies upon narrative devices to carry her argument. By way of contrast, it is interesting to remark that Darwin himself took precisely the opposite course, and the endless compilation of observations that forms the bulk of *The Origin of Species* was a way of keeping narrative subservient to fact, and thus diminishing the scope for methodological criticism of a theory that might otherwise be seen as fanciful. For her part, Buckley obviously needed to produce an altogether more readable text; and whatever theoretical content there was to be in it would more or less have to be carried in narrative form.

<23>In Buckley’s hands, the evolutionary process is thus shorn of the reputation for excessively individualistic competitiveness which seemed to make it a stranger to any kind of pre-established value system; and it is recast in the distinctly matronly tones that we have seen. We might almost say that evolution is systematically “feminised”, so as to give it a more acceptably human face. But it would be more accurate to say that Buckley sought a compromise outlook that would balance and reconcile the virile virtue of activism with the feminine virtues of love and devotion. This effort is plainly translated in the interaction of her two leading metaphors, with the competitive dynamics of Life’s “race” modulated by the placement of the whole story in a family setting: winning life’s race depends on acts of individual prowess, but the real victory is collective. Virile effort is motivated and directed by love of the family.

<24>This drawing together of apparently contradictory forces was perhaps for Buckley a way of reconciling her contemporaries to evolution by casting the theory in the terms of their own paradoxes. High Victorian culture was notoriously torn between its aspiration to piety and

moralism on the one hand and the desire physically to dominate on the other; and we have seen how effectively Buckley was able to put this paradox to work in the construction of an evolutionary narrative that would make sense to her readership. Although she said nothing at all about the mechanics of evolution, Buckley must have had a considerable impact on the first generations of children who would take something like an evolutionary historical dynamic for granted; perhaps considerably more of an impact than the professional scientists and technical evolutionists such as Thomas Huxley or Herbert Spencer.

<25>Like all popularisers, Buckley had to face the thorny methodological question as to how best to strike a workable balance between the empirical exigencies of science on the one hand and the communicative requirements of popular pedagogy on the other. Looking at her efforts to find a compromise position, we cannot help but wonder whether her communication strategy was anything more than a ploy to gain the ear of her audience, and did not, perhaps, reflect all that closely her own preoccupations. What in fact were her priorities? Was she a radical evolutionist, willing to defend the doctrine at any price, including that of repackaging it in bonnets and frills, having calculated that a feminised version was the only one Victorians would take to heart? Or, on the other hand, was she a radical moralist whose priority was to reform Darwinian evolution? The first solution allows Buckley a definite contribution to natural science, but it also enslaves her to Victorian values, including gender roles. The second solution deprives her of a scientific status, but it also liberates her from the somewhat embarrassing need to believe in her own propaganda.

Endnotes

(1) Buckley's scientific popularisations have most notably been studied by Barbara Gates (1997 & 1998). Bernard Lightman also devotes part of a chapter to her in his *Victorian Popularizers of Science* (2007).(^)

(2) 'Narrating evolution: harnessing the facts', in Collé-Bak, Latham and Ten-Eyck (eds.), *Left Out: Texts and their Urtexts*, Presses Universitaires de Nancy, 2009; and 'Raconter l'évolution en images: le cas d'Arabella Buckley' in David Banks (ed.), *L'Image dans le texte scientifique*, forthcoming.(^)

(3) "If it be true that the instincts which lead us to be just and merciful, honest and unselfish, pure and affectionate, to fear moral degradation and to aspire to nobleness of character, are inherent in the very laws of nature, then we shall find the gradual development of these qualities in the ground-work of living nature. In a word, we shall find evidence that high moral values are not true merely because all religions have taught them, but that all religions have taught them because they are true. If we can establish this conclusion, ... we shall have found firm ground

upon which the scientific and religious sanctions of morality meet, affording a bulwark against the flood of scepticism as to all things noble and good, which threatens to overwhelm us.” (*The Moral Teachings of Science*, 7)^(^)

(4)“Revisioning Darwin with Sympathy: Arabella Buckley”, in Gates, Barbara T. & Shteir, Ann B. *Natural Eloquence: Women Reinscribe Science*. Madison, Wisconsin: University of Wisconsin Press, 1997.^(^)

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