

## No 18 Rudolph Magnus (III)

11 January 2011

1. The last two talks in Lansdowne Road were about Rudolph Magnus. He was the neuroscientist who worked out the basic ideas which still underpin the scientific understanding of vertebrate posture.
2. The importance of Magnus for us is that when Alexander came across his work in 1925, it crystallised a lot of his thinking. He began to refer to the *primary control* and he became convinced that Magnus' work provided a scientific foundation for the AT and this gave him increasing confidence in promoting it.
3. Because of the importance of Magnus' work and the length of time and the number of things that have happened since the last talk, I am going to do a brief summary of what we have already covered in relation to Magnus. Anyone who is interested can find the previous two on Magnus talks on my website.
4. Then I am going to look at what Magnus called the *physiological a priori* and how it relates to what Alexander called our *faulty or deceptive sensory appreciation*. Considering its relevance to the science of the AT, I am surprised at how few references there have been in the AT literature to this aspect of Magnus' work.
5. Finally, I am going to have a quick look at how Alexander's ideas on the *primary control* relate to Magnus' findings. This has been an area of considerable discussion in the AT and it is worth getting it right if we are looking at the scientific basis of the AT.
6. Reviewing what we have already discussed about Magnus' work, his key finding from our viewpoint was that there is a set of nerve centres close to each other in the brainstem whose  
*... function is to compound the activity of the whole body musculature to what we call "posture"...*<sup>1</sup>
7. The brainstem is the bit of the brain which extends upwards from the top of the spinal cord. It is part of what is sometimes called the reptilian brain because it is found in early life forms like fish and reptiles. It is in charge of a variety of automatic or reflex functions.
8. The cortex, the thinking part, came much later in evolution which is why it is sometimes referred to as the neocortex.

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<sup>1</sup> Magnus (1925)p340

9. The important point here is that because posture is controlled from the brainstem it is an automatic or reflex activity. It works without any involvement by the cortex, the thinking part of the brain.
10. This means that, in principle, when we stop and “allow standing to happen” the postural reflexes put our whole neuromusculature into its most natural and integrated state. This is why it is often said by AT teachers that if we stop doing the wrong thing, the right thing does itself.
11. But we also saw that stopping and allowing things to happen is not as simple as one might think. This is because as humans we have the big brains that enable us to develop all kinds of damaging habits.
12. Habits are learned patterns of behaviour which drop below our level of awareness and function exactly like reflexes. We spend years misusing ourselves and eventually we reach a stage when we think we are “allowing standing to happen” but we are actually “doing” our standing in our habitual way.
13. Alexander described this inability to know exactly what we are doing – to distinguish between doing things in an habitual way and allowing them to happen as they should – as *faulty* or *deceptive sensory appreciation*. He also refers to it rather more dramatically as a:

*...debauched kinaesthesia, the result of imperfect co-ordination, imperfect adjustment, and unreliable and delusive sensory appreciation.*<sup>2</sup>
14. I said that one way of thinking about the AT is as a means of lifting habit into consciousness so that we alter it or get rid of it.
15. This brings me on to what Magnus called *the physiological a priori* and the remarkable extent to which it parallels Alexander’s thinking.
16. The reason this aspect of Magnu’ work is not better known is that Magnus never actually gave the lecture in which he discusses it. It was one of a series he was to have given in Stanford University in California in 1927 but he died that year before he had the chance to deliver them.
17. They were published by Stanford University in 1930 in a book called *Lane Lectures on Experimental Pharmacology and Medicine* and presumably had a very limited circulation.

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<sup>2</sup> Alexander (1923) p61

18. Coming to the lecture itself, one may ask why he gave it the name *The physiological a priori* ?
19. I told you that Magnus was an admirer of the German philosopher Immanuel Kant (1724-1804). Kant's great philosophical work was called the *Critique of pure reason*. I had been hoping to provide you with a quick and easy summary of his thinking but I think one thing most people would agree on about Kant is that he is difficult.
20. One of Kant's big philosophical concerns was how we know about things. He concluded that the mind has certain innate or a *priori* ideas which form the foundation on which all our thinking rests.
21. Kant was talking about philosophical ideas but Magnus felt it also applied to the way we gain our sensory impressions. Magnus saw that the condition of our senses affects the sense impressions we receive.
22. In the beginning of his lecture Magnus refers to the *Critique of pure reason*, and says:

*In this book Kant showed that in all our observations and in the conclusions we draw from them, in short, that in everything we know of the outer world, there are numerous elements which are given a priori, and which we are therefore compelled to employ in any experience in thinking and in drawing our conclusions.<sup>3</sup>*

23. As an example, he takes colour-blindness. He points out that if I am colour-blind, my sense impressions of the outside world will be different from those of a normal-sighted person. He says:

*The nature of our sensory impressions is thus determined a priori, i.e. before any experience, by this physiological apparatus of our senses, sensory nerves and sensory nerve centres... Here we have to do with fixed mechanisms of our body, with permanent states of our sensory and nervous apparatus, and these will determine the nature of our observations and experiences... But beside these, other "active" processes (reflexes), acting through the central nervous system, also influence our sensory observations and help to determine them a priori.<sup>4</sup>*

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<sup>3</sup> Magnus (1930)p97

<sup>4</sup> Ibid.99

24. In other words, our physiological state, the quality of our sensory awareness, and the way our body is functioning have an influence on how we perceive both ourselves and the world about us. This will have an effect on how we respond to the world from which we are gaining these sense impressions
25. Some of us, to take an example, if we have a few glasses of wine, begin to perceive and respond to the world in a different way. We may come to believe that we are more perceptive, witty interesting and physically attractive than we are at other times.
26. The way Magnus put it was:
- We possess numerous mechanisms acting unconsciously and partly sub-cortically which prepare the work beforehand for our psyche, and the results of which are a priori present before sensory observation and its psychological appreciation start.<sup>5</sup>*
27. The state of our sensory apparatus, *a priori*, conditions the flow of sensory inputs on which our awareness of the world is based.
28. Most scientists would be prepared to accept this general principle. It is quite evident that we are trapped in our own physiological *a priori* in the sense that we are limited to the perceptions that our sensory organs are able to deliver; we do not, for example, have the auditory capabilities of a bat or an owl, nor the visual acuity of an eagle.
29. But it is what Magnus goes on to say that is so remarkable:
- Since all study, analysis, and understanding of the events in the outer world are conducted through the medium of the senses, a scientific worker surely ought to know what are the fundamental mechanisms of his body and of his nervous system which determine the results of his work.<sup>6</sup>*
30. This is where most scientists would tend to part company with Magnus. They might be prepared to accept that their day to day perception of the world is indeed affected by their state of health and well-being, but few would be willing prepared to admit that the results of their work are influenced in any way by the state of functioning of their postural reflexes.
31. They would argue that the use of measuring instruments and the scientific habit of looking for independent confirmation of results goes a considerable way to eliminate the dangers of

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<sup>5</sup> Ibid.103

<sup>6</sup> Ibid.103

results being distorted by the *a priori* biases or perceptual deficiencies of individual scientists, from whatever cause these may arise.

32. But Magnus was quite clear in what he said. Our perception of the external world comes to us through the filter of our senses. If we have impaired the workings of our postural reflexes to an extent that they are not performing their sensory recalibration task effectively, our perceptions will indeed be distorted.
33. The implication is that science is not quite as objective as it thinks it is and the personal viewpoints of scientists influence the judgements they make. Look at bitterness of the arguments over global warming – and evolution.
34. This is obviously a fairly contentious area and we do not want to stray too far into it. But staying close to home and thinking of physicians, as Alexander did, we now that their judgements on how things should be is very much conditioned by how they are themselves are.
35. I remember a much-respected GP of my acquaintance dismissing the fact that one of her patient's shoulders was higher than the other on the grounds "We're all a bit twisted and distorted – don't worry about it." Because of her own *physiological a priori* the GP made no connection between the distortions in the patient's shoulders and the neck and back ains from which she was suffering.
36. In our own case, if our sense of ourselves is distorted by habitual misuse of ourselves we cannot correctly diagnose what we ourselves are doing wrong nor can we figure out a reliable way of putting it right.
37. The compatibility between Magnus and what Alexander said in *The use of the self* is remarkable. Alexander says:  
*We must therefore see the danger of continuing to base our efforts to help ourselves or other people upon beliefs, judgements and convictions which have their source in sensory experiences, without ascertaining whether the mechanisms through which these experiences are conveyed are functioning satisfactorily.*<sup>7</sup>
38. Elsewhere in *The use of the self* he says:  
*Although this technique is concerned more with education than with treatment, it is one which, as I have tried to*

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<sup>7</sup> Alexander (1932) p108

*shew, should be incorporated with medical training, for if this were done, and the medical student taught how to consciously direct the use of his own mechanism, he would be developing within himself a satisfactory standard in his sensory appreciation which would stand him in good stead in diagnosing faults in others.*<sup>8</sup>

39. I think you can see why I feel that Magnus still has something to offer us when we are looking at the scientific underpinnings of the AT.
40. Before finishing on Magnus, there is one other question I think it is worth addressing and that is the question of the *primary control*.
41. As I said earlier, when Alexander heard of Magnus' *central apparatus* it seems to have crystallised his thinking and two things happened: he began to refer to the working of the head-neck relationship as *the primary control* and he became convinced that what he thought of as *the primary control* and what Magnus had referred to as the set of nerve centres in the brainstem that he referred to as a *central apparatus* were one and the same thing.
42. In a letter published in the British Medical Journal in 1932 he challenges "medical men" to submit the Technique to whatever tests they wish and goes on to say:

*On the strength of forty years' practical experience I am bold enough to believe that this would result in proof of the soundness of my technique as conclusive as has been the case with regard to my employment of the primary control, the existence of which has been conclusively proved by the experimentation of the late Rudolph Magnus of Utrecht.*<sup>9</sup>

43. In UCL Alexander says there is a primary control of the use of the mechanisms of the self and then says:

*Those who laid the foundations of our present knowledge of physiology and anatomy were ignorant of the existence of this primary control....Some twenty-eight years after I discovered this control and employed it in a technique, the late Rudolph Magnus announced his discovery of it and its function, and Sir Charles Sherrington referred to*

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<sup>8</sup> Ibid.97

<sup>9</sup> Alexander (1995)p134

*this announcement in his Presidential Address to the Royal Society.*<sup>10</sup>

44. From the publication of Magnus' lectures in the 1920s up into the 1950s, there were various discussions among Alexander's medical supporters about whether Alexander was right in saying that Magnus had scientifically proven the existence of the primary control.
45. A Dr Andrew Murdoch delivered a paper on the relationship between the sub-occipital muscles – a set of tiny muscles located in the atlanto-occipital area – and Alexander's primary control to Sussex Branch of the BMA in 1936. The paper is partly reprinted in Appendix B of UCL.
46. In it Murdoch says that the action of the sub-occipital muscles:  
*...creates the correct conditions in our external body wall for the functioning of the vital organs, and constitutes the primary control which Alexander had postulated and taken advantage of and which Magnus described, but did not locate, many years after.*<sup>11</sup>
47. He thought he had identified the actual primary control and Walter told me he was quite disappointed when Alexander did not agree with him.
48. So the issue as to whether Magnus' central apparatus was the same as Alexander's primary control was quite a live and public one from the publication of Magnus' work right through until the 1950s. For those who want to go further into it, I have put a paper called *The troublesome primary control* on my website.
49. But for now, it brings us to the booklet on Magnus that Walter Carrington wrote in 1950 and which was reprinted by STAT in 1994.
50. In this, he does not go as far as to say that Alexander was mistaken in his belief that his primary control and the central apparatus described by Magnus were the same thing; that was not Carrington's way.
51. He nevertheless makes it perfectly clear that what Magnus had discovered was not Alexander's primary control. So if you are talking to a neuroscientist you want go easy on that line of argument.

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<sup>10</sup> Alexander (1946)p109

<sup>11</sup> Ibid.p196

52. The way Walter Carrington put it was:

*Thus, Mr Alexander's term "primary control" describes something far more extensive than Magnus' "central apparatus", for it embraces all the postural activities of the organism, not only the "brain-stem" mechanism but also the higher centres of the brain, and in particular, the cortical centres which Magnus did not investigate.*<sup>12</sup>

53. Carrington then takes the vital next step into seeing the implications of this – and the fact that the cortical centres can interfere with or obstruct the working of this *central control*. Walter says:

*What Mr Alexander saw was that not only is human behaviour integrated by a central agency, but in a large number of individual instances, his own included, this integrity was being impaired by interference with the working of this central agency. The whole basis of Mr Alexander's Technique is the teaching of how to eliminate interference with the autonomic functioning of the organism.*

54. I think this is Walter Carrington at his insightful best and the implications of what he is saying here go to the physiological heart of what we do. I do not think we could have a more accurate or more succinct summary than this.

*The whole basis of Mr Alexander's Technique is the teaching of how to eliminate interference with the autonomic functioning of the organism.*

## References

- F. M. ALEXANDER (1995) *Articles and lectures* - edited by J.M.O.Fischer - Mouritz, London  
F. M. ALEXANDER (1923) *Constructive Conscious Control of the Individual* - Mouritz, London 2004 edition  
F. M. ALEXANDER (1946) *The universal constant in living* - Mouritz, London (2000 edition)  
F. M. ALEXANDER (1932) *The use of the self* - Gollancz, London, (1985 edition)  
W. CARRINGTON (1994) *The foundations of human well-being. The work of Professor Magnus and the Alexander Technique* - STAT Books, London  
R. MAGNUS (1925) *Animal posture* - *Proceedings of the Royal Society of London. Series B. Vol 98* 339-353  
R. MAGNUS (1930) *Lane lectures on experimental pharmacology and medicine* - Stanford University Press, Stanford

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<sup>12</sup> Carrington (1994)p52