

UNTANGLING THE PRIMARY CONTROL

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The term “primary control” is commonly and confidently employed in the world of the Alexander Technique (AT). It comes from Alexander himself who uses it dozens of times in his written works.

Yet pinning down what exactly the term means is difficult. Alexander’s own use of it and his descriptions of what he meant by it are generally opaque and frequently contradictory. At the same time, he claimed on various occasions that the existence of the “primary control” had been scientifically verified by the work of the pioneering neuroscientist Rudolph Magnus, though this is clearly wrong. Nor is there much agreement among today’s AT teachers about what precisely they mean when they use the term.

Such confusion over the history and present meaning of one of its central terms does little to enhance the scientific credibility of the AT. It can also be dismaying for those who endeavour to distance it from the various “complementary therapies” with which it is increasingly linked in the public mind and even by some AT organisations¹. It is also disturbing to notice that Wikipedia now has a warning on its AT article saying that it contains “weasel words” – the type of vague phrasing that often accompanies biased or unverifiable information.

This paper sets itself the task of untangling and clarifying some of the uncertainties surrounding the evolution and scientific justification for the use of this rather ambiguous term, the “primary control”.

A brief historical sketch

Alexander’s references to the “primary control” began relatively late in his career. His first mention of it was in 1925 after his books, *Man’s Supreme Inheritance* and *Constructive Conscious Control of the Individual*, had been published, and he himself was fifty-six.

The occasion was a lecture he gave to the Child-Study Society in February 1925. He said:

Regarding the central control: in the technique I am using, it will interest you to know that during the past fifteen years, Magnus has worked to explain the scientific significance – as has been brought to our notice recently by Sir Charles Sherrington – in connection with that very control which I have been using for twenty-five years. The direction of the head and neck being of primary importance, he found, as I found, that if we get the right direction

¹ The Society of Teachers of the Alexander Technique (STAT) the largest professional body of Alexander Teachers in the UK has affiliated to the Complementary and Natural Healthcare Council (CNHC), a government-sponsored body which regulates complementary health care practitioners. According to its website (www.cnhc.org.uk), the CNHC presently covers Alexander Technique teachers, aromatherapists, Bowen therapists, massage therapists, nutritional therapists, reflexology therapists, shiatsu therapists, sports injury therapists and yoga therapists. The move to affiliate has been highly contentious within the Alexander profession.

*from this primary control, the control of the rest of the organism is a simple matter.*²

In his subsequent writings Alexander dropped the term “central control” and referred exclusively to the “primary control”.

The reference by Alexander to Sherrington as the source of his information on Magnus’ research results in the above quotation is curious. In his Presidential Address to the Royal Society in December 1924, Sherrington mentioned that Magnus’ work had reached “approximate completion” and referred briefly to some of his more striking findings on the role of reflex action in the activities of the “superior mammals”.³ There is no reference to anything that might be construed as the “central control” or “primary control” described by Alexander.

Six months later, in July 1925, Magnus made the first public presentation of his results in English when he delivered the annual Croonian Lecture to the Royal Society with Sherrington in the chair. In this lecture Magnus referred to his finding that

*... in the brain stem, from the upper cervical cord to the midbrain, lies a complicated central nervous apparatus that governs the entire body posture in a coordinated manner. It unites the musculature of the whole body in a common performance.*⁴

It was this that sparked Alexander’s interest. He had long been well aware of the importance of the neck in the overall control of the body’s musculature and was receptive to anything that reinforced such views. In *Man’s supreme inheritance*, he had said:

*...I may note in passing that in the human being the neck is very often the indicator of inadequate and false controls.*⁵

Elsewhere in *Man’s supreme inheritance*, talking of the contorting efforts made by a man to conceal what he felt was the undue thinness of his neck, Alexander says:

*In the standing, sitting and walking positions these uses, or rather misuses, of the muscles of the neck soon grew into a very firmly established habit...whilst the muscular co-ordinations of the whole organism were gradually and harmfully interfered with.*⁶

Magnus’ findings seem to have crystallised Alexander’s thinking and led him to his own idea of the “primary control” but the question of how he learned of Magnus’ conclusions six months before the lecture containing them was delivered remains unanswered. It is almost as though he had obtained an advance copy of the lecture but there is no record of how that might have happened.

Alexander also became convinced that Magnus had produced clear scientific evidence of the existence of this primary control despite the fact that what Magnus had described was a reflex control centre in the brainstem, isolated from the conscious control of the cortex, and therefore the antithesis of the conscious control that Alexander espoused. It was a claim he was to repeat on various public occasions

² Alexander (1995)p141

³ Sherrington (1924)p262

⁴ (Magnus 1924)p653

⁵ Alexander (1910)p78

⁶ Ibid.p162

In a letter to the British Medical Journal (BMJ) published in July 1932 he challenged “medical men” to subject the procedures he was using in his Technique to

*...such tests as are consistent with their knowledge of physiology, anatomy and psychology. 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.*⁷

In his book *The use of the self*, also published in 1932, Alexander refers to:

*This primary control, called by the later Professor Magnus of Utrecht, the ‘central control...’*⁸

In his last book, *The universal constant in living* published in 1946, he repeats the claim:

*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 this announcement in his Presidential Address to the Royal Society.*⁹

Yet despite these explicit claims that Magnus had scientifically verified the existence of the “primary control” Alexander, himself, is surprisingly imprecise in his own descriptions of what he meant by it. His usage and explanations vary widely during the decades following his adoption of the term and indeed appear at times to contradict each other.

This paper therefore sets itself a number of tasks. The first is to review what Alexander himself said about the “primary control” in order to clarify as far as possible what he meant by the term. The second is to examine the work of Rudolph Magnus and – leaving aside Alexander’s primary control – to demonstrate the relevance of his findings for the broader theory and practice of the AT. The paper then attempts to show how Alexander’s pragmatic discoveries can be combined with the insights of Magnus and his successors to provide a more robust scientific underpinning for the AT.

What Alexander said

In Alexander’s last two books, *Man’s supreme inheritance* and *Constructive conscious control of the individual* and his collected *Articles and lectures* he makes about eighty references to the “primary control”; by far the greater number are in *The universal constant in living*. All these have been compiled by the present author from the meticulously annotated and indexed Mouritz editions of Alexander’s works. In this compilation, each reference is quoted reasonably fully to provide a clear impression of what Alexander was talking about, but the original works need to be consulted to establish the full context in which each particular remark was made. The compilation is available at the link below.¹⁰

⁷ Alexander (1995)p p134

⁸ Alexander (1932) p65

⁹ Alexander (1995)p109

¹⁰ A full set of references to the primary control are available at this link:

Looking through the full collection of Alexander's references to the primary control it can be seen that they vary widely. They may, however, be broadly divided into two types: those in which the primary control is described as a physiological condition, a controlled state of the head-neck-back relationship during activity; and those in which it is described as an instrument that can be "employed" to achieve an improvement in the functioning of the rest of the musculature. This is not an exact demarcation by any means; some of the descriptions fit into both categories and some into neither. But the broad division is of some use in the present context.

Looking first at the descriptions where Alexander describes the primary control as a physiological condition he says in *The use of the self*

This primary control, called by the late Professor Magnus of Utrecht the 'central control', depends upon a certain use of the head and neck in relation to the rest of the body...¹¹

In a lecture he gave to the Bedford Physical Training Centre in 1934 he said:

...I found that a certain control of the use of my head and neck in relation to my back brought about a more satisfactory working of the musculature, and not only relieved my special difficulty but improved conditions generally. In working with my pupils I have used this experience and have found as soon as you can establish this "primary control," as we call it...¹²

Towards the beginning of *The universal constant in living* he talks of a certain relationship of the head and neck to the torso and says:

I found that in practice this use of the parts, beginning with the use of the head in relation to the neck, constituted a primary control of the mechanisms...¹³

In the remainder of *The universal constant in living*, however, he increasingly tends to describe the primary control as an instrument that can be employed to bring about a better use of the whole body. Here are some examples:

... I am now tempted to quote from some of the medical evidence at my disposal, because it supports my contention that interference with the correct employment of the primary control of use is a potent factor in inducing and maintaining the harmful functioning accompanying conditions of ill-health. For many years I have demonstrated in my daily work with pupils that wrong employment of the primary control of use can be checked...¹⁴

Here is another one from the same book:

Unfortunately the great majority of civilized people have come to use themselves in such a way in everything they are doing they are constantly interfering in a greater or lesser degree with the correct employment of the primary control of their use....¹⁵

And another:

¹¹ Alexander (1932) p65

¹² Alexander (1995)pp164

¹³ Alexander (1946)p8

¹⁴ Ibid.p15

¹⁵ Ibid.p8

*The habitual wrong employment of the primary control of the pupil's use of himself, responsible for his reaction in performing such acts as sitting in and rising from a chair, is prevented, and is gradually superseded by a new and improved manner of use which, by a reconditioning procedure, is associated with new reflex activity.*¹⁶

Alexander's writings are well known for their prolixity. He believed that the ideas he was trying to express were clarified by adding explanations. In the preface to *The universal constant in living* he rebuked those who had complained about his long sentences saying:

*...But ideas or experiences concerned with unified phenomena and which involve the indirect method for general, instead of specific, application can only be fully expressed by a sentence that conveys the meaning of such ideas and experiences so that there can be no doubt that these are conceived of as a coordinated indivisible whole.*¹⁷

His long association with John Dewey cannot have helped, as even a brief dip into Dewey's writings will show.

Perhaps most of all, the lack of consistency and clarity in Alexander's references to the primary control in *The universal constant in living* are a result of its rather odd mode of composition. When he was working on the book, during the late 1930s, Alexander would make notes on various points which occurred to him during his teaching which he would expand during the weekends. These notes were then discussed with his assistants, Walter Carrington and Ethel Webb, and the revised notes were then filed under subjects that would subsequently become chapters of the book which was put together by the writer Anthony Ludovici.¹⁸

The piecemeal way in which the book was put together is reflected in its overall lack of coherence. Even such a staunch friend and associate of Alexander's as the American AT teacher and author Frank Pierce Jones remarked that it

*...has very little organisation and can only be considered as a long, disconnected appendix to the earlier books.*¹⁹

The following long quotation from *The universal constant in living* is a final example of Alexander's attempts to clarify what he means by the primary control. It combines both his sense of it as a state of the head-neck-back musculature and a instrument which can be employed to improve the standard of general functioning of the neuromuscular system.

...I discovered that a certain use of the head in relation to the neck, and of the head and neck in relation to the torso and the other parts of the organism, if consciously and continually employed, ensures, as was shown in my own case, the establishment of a manner of use of the self as a whole which provides the best conditions for raising the standard of functioning of the various mechanisms, organs and systems. I

¹⁶ Ibid.p83

¹⁷ Ibid.pxxxv

¹⁸ Bloch (2004)p170

¹⁹ Ibid.p182

found that in practice this use of the parts, beginning with the use of the head in relation to the neck, constituted a primary control of the mechanisms as a whole, involving control in process right through the organism, and that when I interfered with the employment of the primary control of my manner of use, this was always associated with a lowering of the standard of my general functioning. This brought me to realize that I had found a way by which we can judge whether the influence of our manner of use is affecting our general functioning adversely or otherwise, the criterion being whether or not this manner of use is interfering with the correct employment of the primary control.²⁰

Reflecting the various uncertainties in what Alexander actually meant by the term, there was a lively debate about the primary control among some of his medical supporters during the 1930s. Dr Andrew Murdoch, a medical doctor and chairman of the Sussex branch of the British Medical Association (BMA), was a firm believer in the AT. He publicised it whenever he could and wrote letters about it to the medical press. He 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 the Sussex Branch of the BMA in 1936.

Murdoch’s paper is partly reprinted in Appendix B of *The universal constant in living*. The published extract deals mainly with the sub-occipital muscles and the labyrinth. 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.²¹

As this shows, Murdoch was convinced he had identified the primary control and according to Walter Carrington²² he was quite disappointed when Alexander did not agree with him. Alexander makes no comment on the paper and gives no indication why he included it as an Appendix even though he was not prepared to endorse what Murdoch said.

Wilfred Barlow, Alexander’s most prominent medical supporter and, himself, a teacher of the AT, presumably had Murdoch and others in mind when he wrote rather sarcastically in his book *The Alexander principle*, which was published in 1973, that

Alexander and some of his supporters at one time seemed to impute an almost magical significance to the ‘Primary Control’ and some of his medical friends gave him information about ‘controlling centres’ in the mid-brain in terms which seemed to imply a subjective awareness of such a centre, which could exert a ‘Primary Control’ over the rest of the body. Shades of Descartes and his Pineal Body.²³

²⁰ Alexander (1946)p8

²¹ Ibid.p196

²² Personal comm

²³ Barlow (1973)p28

This brief overview of what Alexander himself said about the primary control thus leads to no firm or incontestable view of what he actually meant by the term. It is useful to turn now to the work of Rudolph Magnus.

Rudolph Magnus and his work

Like most great scientists, Rudolph Magnus' personal life was fairly undramatic. He was born in Germany in 1873 and was a bright and studious child. He studied medicine in Heidelberg University and was awarded his PhD *summa cum laude* in 1898. After the award of his doctorate, he was appointed Associate Professor of Pharmacology in the University.

In addition to his scientific leanings, he was a highly cultured man. He was interested in the visual arts and philosophy especially Immanuel Kant (1724-1804). He was also interested in the poet and scientist, Goethe (1749-1823) and took time off from his university and research duties in the early 1900s to repeat Goethe's experiments on colour using the original laboratory instruments in the Goethe museum. These lectures were printed as a book in Germany in 1906 and this was published in English in America in 1949 under the title *Goethe as a scientist*.²⁴

In the early 1900s, arising from his work on pharmacology, Magnus became interested in the advances then being made in understanding the nervous system. He knew, of course, about Sherrington and his work and had heard him lecturing at a couple of conferences. He realised that one of the neurophysiology problems he was wrestling with could best be researched by going to England and working on it with Sherrington for a while in his laboratory. So, in 1908 he spent his Easter holidays with him in England.

It turned out to be a life-changing event for Magnus. It was this spell of working with Sherrington that gave Magnus his interest in the study of posture which lasted for the rest of his life and on which his reputation mainly rests. As for Sherrington, he was content to leave the main study of posture to Magnus, confident that it was in good hands. It was while he was working with Sherrington that Magnus got the news that he had been appointed Professor of Pharmacology at the University of Utrecht in the Netherlands and he remained in that position until his death.

It might be wondered why Magnus was prepared to devote the greater part of his scientific career to studying animal posture. The reason comes back to Sherrington who in 1908, was at the height of his powers. His recently published *The integrative action of the nervous system* was in the process of becoming the defining text of the rapidly emerging discipline of neuroscience.

Though Sherrington never denied or downgraded the role of the conscious mind – he was not a determinist – he realised that the behaviour of the body as a neuromuscular mechanism is mainly reflex. He also realised that in working to understand the functioning of this mainly reflex mechanism, it was not always necessary to analyse vigorous activity. A great deal could be discovered by looking at how the body worked in repose and gentle movement. In *The integrative action of the nervous system* he had said:

...much of the reflex reaction expressed by the skeletal musculature is postural. The bony and other levers of the body are maintained in certain attitudes both in regard to the horizon,

²⁴ O. Magnus (2002)p145

*to the vertical, and to one another...Innervation and co-ordination are as fully demanded for the maintenance of a posture as for the execution of a movement.*²⁵

In other words, far from representing a fixed and rigid configuration of the muscles, posture displays them in action in patterns as dynamic, if not so immediately evident, as those in movement. Posture and reflexes were live issues at the time. The stage was set for Rudolph Magnus.

It is important to note that Magnus and his team were interested in posture as a reflex activity. In most of their experimental animals, the cortex, the thinking part of the brain was either removed or contact between it and the rest of the body was surgically prevented. It should also be mentioned here that the research team adhered strictly to Sherrington's definition of a reflex which he distinguishes from acquired habits of any kind:

*Habit arises always in conscious action; reflex behaviour never arises in conscious action. Habit is always acquired behaviour, reflex behaviour is always inherent and innately given. Habit is not to be confounded with reflex action.*²⁶

Over the years, Magnus and his team in Utrecht kept up a steady output of scientific papers. They were mainly on different aspects of the neurophysiology of posture but Magnus maintained an interest in other scientific areas. In his lifetime, he published over 300 papers on various subjects.

In 1924, a full report on his postural studies was published in German under the title *Korperstellung*. This was not translated into English until 1987 under the title *Animal Posture*. In the Croonian Lecture at the Royal Society in 1925 he presented a summary of his main findings. He also delivered two lectures, called the Cameron Prize Lectures, in the University of Edinburgh in 1926, which were subsequently published in the *Lancet*. He had been due to give three lectures at Stanford University in California in 1927 but he died before he could do so. The University printed edited versions of these lectures in 1930. Illustrating the breadth of his scientific interests, one was on the experimental pathology of the lungs; another was on choline as an intestinal hormone; the third, entitled *The physiological a priori* reflects Magnus' interest in Immanuel Kant and will be discussed later in this paper.

Magnus died while on a walking holiday in 1927 at the age of 53. He had been nominated for the Nobel Prize in the same year and would almost certainly have been awarded it but the award is not made posthumously. Everyone who knew him seems to have liked and respected him and the editor of his Stanford lectures described him as having had a candid generous and open personality.²⁷

Magnus' results

Perhaps the clearest summary of the results of Magnus' postural studies is in *Body posture* where he says:

...the principal results of the study are that the centers for the body posture and the labyrinth reflexes are arranged in three great functional groups in the brain stem.

²⁵ Sherrington (1948)p339

²⁶ Ibid.xvi

²⁷ Magnus (1930)p244

1. *From the entrance of the vestibular nerve backward to the upper cervical cord; the centers for the labyrinth and neck reflexes on the whole body musculature with the exception of the righting reflexes.*
2. *Between the entrance of the eighth nerve and the eye muscle nuclei; the centers for the labyrinth reflexes on the eyes.*
3. *In the midbrain: the centers for the righting reflexes...*²⁸

It should be noted that the brainstem is not just concerned with the control of posture. It houses the centres for the twelve cranial nerves which control the muscles involved in the visual, auditory and gustatory systems, as well as the functioning of the eyelids, lips, and muscles of the forehead and general facial area. This area is sometimes known as the reptilian brain because the functions it controls evolved hundreds of millions of years ago in early reptile life. The main point about the brainstem in the present context is that all the activities it controls are reflex, they are hard-wired and work automatically, in the complete absence of the cortex.

Discussing the centres for body posture, Magnus said:

*Their function is to compound the activity of the whole body musculature to what we call "posture"...*²⁹

And goes on to remark that:

*We have here a very good example of what Sherrington has called "the integrative action of the nervous system."*³⁰

It would be a mistake to think the postural reflex systems are concerned only with simple actions. In his introduction to the new edition of *The integrative action of the nervous system*, published in 1947, Sherrington wrote about how the decerebrate or mindless animal can perform extremely complex actions as though they were a sophisticated machine:

*...these mindless acts yet treat the animal's motor machinery as a united whole. Thus the mindless machine can walk and run, and gallop; it can also spring. These acts include 'balance' and adjustments of poise as well as phasic movements duly coordinated. There is integration although purely motor integration.*³¹

A point of particular interest to AT practitioners is what Magnus discovered about the role of the head in posture. He found that if he took one of the animals from which the cerebral hemispheres had been removed and moved its head up, down or sideways

*The mechanism as a whole acts in such a way that the head leads and the body follows.*³²

He also found that:

*The attitudes impressed upon the body by a certain head position... closely resemble the natural attitudes shown by the intact animal during ordinary life.*³³

²⁸ 632

²⁹ Magnus (1925)p340

³⁰ Ibid.p340

³¹ Sherrington (1948)pxvi

³² Magnus (1926b)p588

The position of the head, in other words, influences the whole of the musculature. Such a conclusion would have pleased Alexander but not surprised him; it confirmed what he knew from his own decades of teaching

The fact that the complex business of posture is controlled from the brainstem rather than being consciously directed by the cortex is perhaps surprising but Magnus points out the necessity of this arrangement.

It seems to be of the greatest importance, that the whole central apparatus...is placed subcortically in the brainstem and by this means withdrawn from all voluntary action.³⁴

The reason is that volition, the decision to do something, always overrides the postural reflexes. The motor cortex sends out signals and the muscles contract in the order and to the degree required to perform the action. But when the action is over, as Magnus says:

The brainstem centres... restore the disturbance and bring the body back into the normal posture so that the next cortical impulse will find the body prepared to start again.³⁵

Sherrington had touched on the same point in *The integrative action of the nervous system* when he had pointed out that, from the viewpoint of a higher animal, it is important that the voluntary should be able to override the reflex relatively easily so that the musculature can swing into action when required. As Sherrington puts it:

It is of obvious advantage that this background should be easily upset, so that the animal may respond agilely to the passing events that break upon it as intercurrent stimuli.³⁶

When such an action has been completed, the postural reflexes reassume control and bring the musculature back into a balanced and harmonious state. In Sherrington's words, they

...form, therefore, a nervous background of active equilibrium.³⁷

With the neuromusculature back in tune with itself the cerebral cortex can work on it to perform the next willed or volitional act. Magnus described the posturally adjusted neuromuscular mechanism as

...the apparatus on which the cerebral cortex plays, as complicated melodies are played on a piano, according to principles which are partly known and which now can be investigated from a new point of view.³⁸

Interaction between reflex and voluntary

Magnus' work revealed the complexity of the reflex system in vertebrate animals but the clarity and precision of his results were made possible by the fact that for the most part he was working with decerebrate subjects. In their normal intact state, however,

³³ Ibid.p588

³⁴ Magnus (1925)p349

³⁵ Ibid.p349

³⁶ Sherrington (1948)p232

³⁷ Ibid.232

³⁸ (Magnus 1924)p653

there is considerably more to these creatures, and to humans, than the reflex as Sherrington had pointed out twenty years earlier:

The behaviour of the spider is reported to be entirely reflex; but reflex action, judging by what we can sample of it, would go little way toward meeting the life of external relation of a horse or cat or dog, still less of ourselves. As life develops it would seem that in the field of external relation "conscious" behaviour tends to replace reflex, and conscious acts to bulk larger and larger.³⁹

This brings any discussion of the primary control into the difficult territory of the relationship between the voluntary and the reflex in human activity. Both systems control the same skeletal muscles; the difference is that voluntary actions are initiated from the motor cortex and the reflex activity takes place in response to the appropriate internal or external nervous stimuli even when the cortex has been removed.

The interchange of control between the voluntary and the reflex described in the previous section is clearly not a simple binary process; it necessarily involves a great deal of overlapping between states in which muscles are being controlled by the cortex and those when control is ceded to the reflex. But as long as the postural reflexes are functioning properly they continue to provide what might be called a tendency for the muscular system to return to its natural state of harmony. Without this reference, or default, state to which the musculature has a tendency to return automatically, there would be nothing to prevent patterns of muscular tension remaining as residues of voluntary activities. One of the roles of the postural reflexes in vertebrate creatures is to prevent any such build-up of distortions in the neuromuscular system.

The importance of this role varies between creatures. Lizards, for example, have little room for variation within their more or less totally reflex behaviour. They cannot be taught to use themselves in ways that are significantly different from those dictated by their postural reflex systems. To a lesser extent, the same is true of rabbits and guinea pigs; they can only do things their own way.

Cats, dogs, horses and monkeys have a greater capacity to override or suppress their postural reflexes. The problem for humans is that they have a uniquely powerful capacity for behaviour that is different from and capable of permanently overriding the working of their postural reflex systems. It is not just that they have a greater cerebral capacity which enables them to think of different ways of using themselves; they also have a neuromuscular system with a higher degree of plasticity than probably any other vertebrate. This is why people are able to learn new skills and adapt themselves to a huge variety of different patterns of action, from gymnastics and ballet dancing to spending their days slumped in front of a computer.

But this capacity to override the postural reflexes can bring problems. The new way of using the body can, in time, become so habitual that the person has no awareness of the extent to which the restorative action of the postural reflexes has been suppressed. Here, yet again, Sherrington's observations are relevant:

The transition from reflex action to volitional is not abrupt and sharp. Familiar instances of individual acquisition of motor coordination are furnished by cases in which short, simple movements, whether reflex or not, are by practice under volition

³⁹ Sherrington (1948)pxvi

*combined into new sequences and become in time habitual in the sense that they no longer require concentration of attention upon them for their execution. As I write, my mind is not preoccupied with how my fingers form the letters; my attention is simply fixed on the thoughts the words express. But there was a time when the formation of letters, as each one was written, would have occupied my whole attention.*⁴⁰

This is a good description of how the voluntary becomes the habitual. But Sherrington is also pointing out that elements of the reflex are also incorporated in an elaborate sequence of voluntary activity such as that involved in writing. In time, the cortex can become the dominant controlling force so that everything is driven by it, and the postural reflexes are so heavily suppressed they are no longer able to perform their restorative function in the neuromuscular system. Such a failure of the postural reflexes to restore the musculature to its proper working state has a variety of obvious effects. If people are not automatically taken back to their proper state of harmonious muscular balance after various forms of activity, the wide variety of twists, stoops, chronic states of tension and other distortions to which people so generally find themselves subject are predictable.

Magnus, however, pointed to a more insidious and deeper danger in his lecture *The physiological a priori* which was mentioned earlier. This lecture reflects Magnus' interest in Kant. One of Kant's philosophical concerns was how the mind knows about things and he postulated that there are certain innate or *a priori* ideas which form the foundation on which all thinking rests. Although Kant was talking about pure thought, Magnus felt the idea was relevant to the sensory impressions which are the raw material of at least a high proportion of thought. This means that the content of thought will be affected by the way sense impressions are conditioned by the state of the senses.

In the beginning of his lecture Magnus acknowledges his debt to Kant's major work, *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.*⁴¹

Magnus points out, as an example, that a colour blind person has a different experience of the world from a normal-sighted person and will draw different conclusions about it. 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

⁴⁰ Ibid.387

⁴¹ Magnus (1930)p97

*nervous system, also influence our sensory observations and help to determine them a priori.*⁴²

The quality of our sensory awareness, in short, has an effect on how we perceive both ourselves and the world about us. The way Magnus put it was that:

*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. 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.*⁴³

This brings to mind Alexander's ideas on what he called faulty sensory appreciation. Alexander repeatedly makes the point that one of the biggest problems people face in righting what is has gone wrong in their neuromuscular system is that their sensory appreciation of themselves is filtered through their own sensory apparatus. If their sense of themselves is distorted by habitual misuse of themselves they no longer have a reliable guide to how they are using themselves. This means that they can neither diagnose what they are doing wrong nor figure out how to put it right.

In *The use of the self* 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.*⁴⁴

Given the lack of any evidence that Alexander had read Magnus' lecture the convergence of ideas and the way in which they are expressed is remarkable. It remains a tantalising exercise for AT practitioners to speculate on what Magnus might have brought to the AT if he had had direct experience of it.

Beyond the misunderstandings

There is no doubt that Alexander misunderstood what Magnus had discovered. The assembly of neurological centres in the brainstem which Magnus described as a central apparatus that compounded ...*the activity of the whole body musculature to what we call posture ...*⁴⁵ is very different from any of Alexander's descriptions of the primary control.

It is, however, unlikely that this would have unduly worried Alexander had it been pointed out to him. His knowledge of neuroscience was sketchy; his venture into the description of the working of a reflex arc in *The universal constant in living* illustrates the point.⁴⁶ Dilys Carrington, herself a long-time and remarkably effective AT teacher, who knew and worked with Alexander, was of the view that though he

⁴² Ibid.99

⁴³ Ibid.103

⁴⁴ Alexander (1932) p108

⁴⁵ Magnus (1925)p340

⁴⁶ Alexander (1946)pp112

was supremely confident in the application of his Technique, he had little scientific understanding of how precisely it worked but was always willing to use whatever means were at hand to promote it.⁴⁷ At the same time, and in the face of what he saw as the overwhelming evidence for the efficacy of what he was doing, Alexander felt able to remain detached from, indeed above, the scientific arguments.

The reason he included the extract from Dr Andrew Murdoch's paper in *The universal constant in living*, even though he disagreed with it, may simply have been to show that medical people were taking him seriously. It has also been suggested that his use of the phrase *practice and theory* in *The universal constant in living*, instead of the more conventional *theory and practice* which he used in his earlier works, was to emphasise his view that in the application of the AT practice precedes theory.⁴⁸

Alexander's main misapprehension was that Magnus' postural control centres in the brainstem were subject to conscious control. This is particularly evident in his commentary on an extract from Sherrington's *Man on his nature* which he reproduced in *The universal constant in living*. Sherrington had written:

*Take this act of "standing". That to execute it requires among other things the right degree of action of a great many muscles and nerves, some thousands of nerve fibres and of perhaps a hundred times as many muscle-fibres. In doing so my brain's rightness of action rests on receiving and despatching thousands of nerve-messages, registering and adjusting pressures, tensions etc in various parts of me. I am perhaps rather disappointed at the very little that my mind has to tell me about my standing...It seems that this power within me, which identifies itself with me, and calls itself 'I', and wills the body to stand upright, and the body does so, or wills the body to sit down and the body does so, does not know how the body does these things.*⁴⁹

Alexander's remarks reveal that he had not understood the point Sherrington was making. He comments that Sherrington's

*...conception of what was required for a full study of the central nervous system could not have been a comprehensive one...He found himself, in his words, "though fully aware that I am standing," unable to tell himself "how it is that I stand" – that is, without that knowledge of the "means-whereby" of the directing and despatching of the messages through the nerve fibres, and the registering and adjusting of pressures and tensions throughout the organism...These "means-whereby" are all-important, because upon them depends that employment of the primary control of the use of ourselves by means of which we learn how we do the thing we are doing...it is by the knowledge of the "how" of the conscious employment of the primary control of our use that we are enabled to restore "right degree of action" and "co-ordinative management" to the mechanisms.*⁵⁰

⁴⁷ Personal comm.

⁴⁸ Note by Jean Fischer in Alexander (1946)p244

⁴⁹ Sherrington (1951)p146

⁵⁰ Alexander (1946)p119

Sherrington's point is precisely the reverse. In the chapter in *Man on his nature* from which the extract is taken, Sherrington goes on to explain how the vestibular system automatically governs the relationship of the head and eyes and body to each other just as they do in a bird wheeling in the sky. He remarks of these automatically working systems:

*Descartes can claim them for pure mechanism. They work themselves, and our mind knows but the result. The mind is unaware of how we do our standing, walking, running and so on.*⁵¹

Alexander's assistant Walter Carrington, in fact, did point out Alexander's misapprehension in a paper he wrote in 1950 which, he said, Alexander had read and intended using in a future book⁵² – which was never written. The paper appeared unchanged in a booklet published by STAT in 1994. Carrington does not go as far as to say that Alexander was mistaken in his belief that his primary control and the central control described by Magnus were the same thing; that was not Carrington's way.

He nevertheless makes it perfectly clear that what Magnus had discovered was not Alexander's primary control. This is how he put it:

*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.*⁵³

From this it is evident that Carrington was fully aware of the difference between the integrating function of the postural reflex system that Magnus had identified and the much more complex overall functioning of the intact human being. What Magnus', and indeed Sherrington's, work amply confirmed was precisely what Alexander had long understood: the importance of the head-neck relationship in the overall functioning of the neuromusculature.

It is also worth noting that Sherrington himself, despite being rather patronisingly misunderstood in *The universal constant in living*, was quite happy to link his name publicly with Alexander's. The occasion was his last book, *The Endeavour of Jean Fernel*, published in 1946, in which Sherrington displayed his wide-ranging erudition in tracing the life and work of the 16th century physician, Jean Fernel, whom he admired as a reformer and important precursor of modern medical and scientific thinking.

Following a striking passage on the underlying reflex element in what he termed "willed movement or posture", Sherrington wrote:

Mr Alexander has done a service to the subject by insistently treating each act as involving the whole integrated individual, the whole psychophysical man. To take a step is an affair, not of this

⁵¹ Sherrington (1951)p148

⁵² Walter Carrington personal comm

⁵³ Carrington (1994)p52

*or that limb solely, but of the total neuro-muscular activity of the moment – not least of the head and neck.*⁵⁴

The personal reference, embedded in a longer passage which is noticeably redolent of Alexander's thinking, came as a pleasant surprise to Alexander when it was brought to his attention. He wrote to Sherrington thanking him and Alexander's biographer Michael Bloch quotes from Sherrington's reply:

*I need not repeat to you that I appreciate the value of your teaching and observations. I was glad to take the opportunity to say so in print. I know some of the difficulties which attach to putting your ideas across to those less well-versed in the study than yourself...*⁵⁵

Taken in their context, Sherrington's remarks appear to come from a clear understanding of some of the main elements of Alexander's teaching. It seems as though he saw Alexander's work as both beneficial and compatible with his own thinking.

Conclusion

There is no doubt about the primacy of the head-neck-back relationship in the overall control of the working of the musculature. Magnus' observation that the head leads and the body follows presumes a properly working connection between the head and the rest of the body. Alexander's focus on this area as a critical determinant – or primary control – of the functioning of the rest of the musculature was entirely correct.

That said, it is a simple matter to discredit Alexander's claim that the existence of the "primary control" had been conclusively proved by Magnus' work. The central apparatus Magnus identified was a set of neurological structures tucked inside the skull in the brainstem rather than an arrangement of muscles in the neck. Alexander's insistence on the possibility of extending conscious control to the postural reflexes through such a central control was based on a serious misunderstanding of what Magnus had said.

The basic activity of the postural reflexes is, by its reflex nature, outside conscious control. but the habits which interfere with or override the postural reflexes are the result of voluntary actions and these habits can be gradually and deliberately unwound. In that sense, Alexander was completely correct. The way Walter Carrington phrased it was:

*The whole basis of Mr Alexander's Technique is the teaching of how to eliminate interference with the autonomic functioning of the organism.*⁵⁶

From the viewpoint of the AT practitioner, the general opacity and inconsistency in Alexander's use of the term "primary control" makes it advisable to be cautious when using it. It is likely to bring more confusion than clarity. There is certainly no basis for its use as a scientific term in a scientific context. But such terminological misgivings have few if any consequences for the day-to-day practice of the AT.

⁵⁴ Sherrington (1946)p89

⁵⁵ Bloch (2004)p207

⁵⁶ Ibid.p52

There is ample evidence for the efficacy of the AT and a reasonable idea of how the results are achieved; the present need is for more detailed neuroscientific analysis of what exactly is happening.⁵⁷ For the moment, the knowledge that there is a powerful integrating and balancing system of postural reflexes which works to bring the overall neuromusculature into harmony when the cortex stops interfering is an important justification for the work of AT practitioners. It means that familiar AT practices such as stopping and “allowing standing to happen” are satisfactorily grounded in the science of the postural reflexes.

The hope is that this paper has helped bring some clarity to the question of the “primary control” and in the process has shed some additional scientific light on the working of the AT. At the end of his Cameron Prize lectures, which were delivered to medical students in Edinburgh University, Magnus talked of the amount of work yet to be done and said:

*Every step of progress makes it possible to formulate new questions and to delimit anew the bounds of the unknown.*⁵⁸

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⁵⁷ The paper *Towards a neuromusculature of the Alexander Technique* which is available on my website www.geradfoley.co.uk provides some further thoughts on this.

⁵⁸ Magnus (1925)p353