

No 19 GEORGE ELLET COGHILL (I)

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1. In the last couple of talks, before Easter, I talked about the early neuroscientist Rudolph Magnus and his work on the postural reflexes, and how this relates to our understanding of the Technique and Alexander's thinking on the primary control.
2. Today, I want to turn to the work of another prominent scientist called George Ellett Coghill (1872 – 1941). He learned about the Technique late in life and came to a strong view that Alexander was on to something important. He wrote an Appreciation of the Technique which appears in the beginning of UCL.
3. Coghill has to a considerable extent dropped out of sight in discussions on the AT. One of the reasons is that his field of work is extremely specialist – he has been described as a pioneer neuro-embryologist – and his writing is quite hard to understand.
4. But he was undoubtedly a great scientist and he had the opportunity of working intensely and talking with Alexander over a whole weekend.
5. To start with, I will do what I usually do in these talks and tell you about my sources so anyone who is particularly interested can track them down for themselves. Then I will give you an outline biography of Coghill. And then I will discuss the particular relevance of Coghill's work to the AT.
6. As with Sherrington and Magnus, the sources are generally books and papers published in the early to middle decades of the last century which makes them a bit hard to get, though you can always chase them on the second-hand network abebooks.co.uk.
7. The most accessible direct source for Coghill's own publications is a book entitled *Anatomy and the Problem of Behaviour* which was first published in 1929. It consists of an introduction by Coghill and the text of three lectures he gave in University College London in May 1928. These are generally quite technical and fairly hard going but the book went down very well in the scientific world and was reprinted in 1964.
8. There is also a biography of him called *George Ellett Coghill: naturalist and philosopher: science from inside the workshop, as revealed in the life and work of a great man of science* by a

distinguished neurological scientist called C. Judson Herrick (1866-1960) which was published in 1949.

9. Herrick and Coghill knew each other as friends and scientific collaborators for over forty years. This book has basically all the facts about Coghill's life and work.
10. It also has a very densely written 50 pages of imagined philosophical dialogue between Herrick and the ghost of Coghill in which Herrick, using his knowledge of Coghill, and surviving fragments and drafts of his philosophical writings, tries to produce an overview of Coghill as a philosopher. It is not easy going – in fact it's a bit embarrassing.
11. We are also lucky in the fact that Walter did a very good paper called *The Foundations of Human Well-Being* on Coghill in 1941. This is the same booklet which includes the discussion of Magnus that I mentioned in the last talk.
12. The discussion on Coghill is a very impressive piece of work by Walter. He was only 25 at the time and had no scientific training or background when he wrote it. In *Personally Speaking* Walter says

I began a study of Coghill's and Alexander's work, which kept me very busy indeed for most of the following year. The project involved reading all of Coghill's publications and re-reading FM's books very carefully on a comparative basis. It was hard work but very rewarding and I finished the paper in 1940 just before I went into the Air Force.¹
13. This is a thoroughly insightful and good piece of work and Walter said Alexander was delighted with it. He was going to use parts of it in UCL but then decided to keep it back for use in a separate publication which he never managed to write.
14. As for Coghill's life, he was born in Illinois in 1872 and grew up as a sensitive and intelligent boy in a poor farming family. Religion was an important part of community life and he thought he wanted to become a Baptist preacher.
15. He actually entered a theological college but had a crisis of conscience when he asked what he thought was a reasonable question of one of the teachers. His teacher became extremely angry with him and told him that to question the bible was to insult the Lord.

¹ Carrington (2001)p17

16. So he left the theological college and had a fundamental think about what he wanted to do with his life. He rather modestly decided that what he wanted to do was to
- ...carry out a systematic investigation of the natural history of the human mind by application of scientific method to psychological problems, with the hope of ultimately reaching a satisfying naturalistic philosophy.²*
17. He then had the good fortune to meet Professor Clarence Herrick who was president of the newly founded University of New Mexico.
18. Professor Herrick seems to have been a very open and generous man – he happened to be the elder brother of the other Herrick who was to be Coghill’s biographer. He was very supportive to Coghill and he gave him the encouragement he needed to set a new course for himself.
19. Coghill was nothing if not thorough – not say obsessive. In order to carry out this study, he felt he needed to know an awful lot more about the human brain and the human nervous system. So he started by doing a primary degree and then an MSc in biology at the University of New Mexico and was such a good student that he actually became assistant professor of biology.
20. For those who like the little bit of human interest, when he was at university, he played the cornet which led to his getting to know a young lady called Muriel Anderson who acted as his accompanist. They fell in love and married in the year 1900.
21. He meanwhile had won a scholarship to study for a PhD at Brown University in Rhode Island on the east coast of America. His research and dissertation were on the cranial nerves of a little creature called amblystoma. This is an American species of newt, a sort of froglike amphibian, which is also sometimes referred to as a salamander.
22. While he was working on his PhD and throughout his whole working life, he maintained his interest in philosophy and psychology.³ His biographer said he read widely and thoughtfully.⁴ John Dewey was one of the authors who influenced his thinking.⁵

² Herrick (1949)18

³ Ibid. p20

⁴ Ibid. p168

⁵ Ibid. p168

23. After he got his doctorate, he had a series of poorly-paid teaching jobs in impoverished universities in the West and Northwest of the US. Eventually, he got a position as Professor of Zoology in Denison University in Ohio in 1907.
24. When the Coghill family, which by now included three little boys, got to Denison there was no suitable accommodation available. Coghill bought a plot of land that sloped away from the road, and to the consternation of the neighbours, he built an upside down house, with the living rooms under the roof at the street entrance and stairs down to the bedrooms. He also developed a vacuum cleaner system with a centralised suction motor and pipes to all the rooms.
25. Life was hard for everyone and he had a hugely heavy teaching load. But this was where he began to develop the detailed research programme into the embryology and early development of amblystoma which was to occupy most of his professional life.
26. You might ask why he chose amblystoma. Basically it was a readily available and extremely simple form of vertebrate life. It can be collected from the wild in various parts of the United States. As he said
- ...there is probably no other animal that offers better advantages than Amblystoma presents for the search after general principles of behaviour and nervous function in the vertebrates.⁶*
27. He was a brilliant and extraordinarily thorough researcher. Despite all his problems, and the lack of research resources, he began to publish some of his results and word about the quality of his work began to circulate in the scientific community. In 1913 he was able to get a position as Professor of Anatomy in the University of Kansas.
28. It was there he began the publication of a series of twelve *Studies of the Growth of the Nervous System of Amphibia*⁷ which came out in the *Journal of Comparative Neurology* in the twenty two years between 1914 and 1936.⁸
29. These were highly technical papers and had names like *The development of the pattern of differentiation in the cerebrum of Amblystoma punctatum*; and *Quantitative relations of the spinal*

⁶ Coghill (1929)5

⁷ Herrick (1949)27

⁸ Ibid. p39

cord and ganglia correlated with the development of reflexes of the leg in Amblystoma punctatum.

30. Although he was still overworked and very poorly paid he was now really making progress in his research. In 1922, he took leave of absence from Kansas to carry out his most famous set of experiments.
31. These were done at the University of Chicago by Coghill himself and some assistants. It was an extremely detailed study of the development of the nervous system in amblystoma from the time of they hatched out of their eggs until they had developed to the stage where they were able to swim.
32. In these experiments, thirty specimens of newly hatched amblystoma were placed in dishes of nutrients and set in a circle on a round table. There was an overhead microscope which could be swung around from dish to dish.
33. Looking through the microscope, the researchers made notes on the state of each of the growing specimens, and how they responded to tactile stimuli, generally by stroking them gently with a human hair. They then swung the microscope on the next one and repeated the observations.
34. It took about 15 minutes to go round the whole thirty specimens on the table. This was then repeated day and night until the newly hatched specimens had reached the stage of actually swimming, which occurred about 60 hours after hatching. They did four sets of these experiments.⁹
35. Basically, these and other experiments he did enabled him to observe the way in which the behaviour of these little creatures developed. At the same time, he could chop up samples of the creatures at each of these stages of behaviour and by examining them under the microscope, he could see what stage their nervous system had reached.
36. At a technical level, this was seriously difficult. The newly hatched amblystoma is only about 3 mm (just over a tenth of an inch) long and it is 7 mm long when it begins to swim. So finding out exactly what stage of development its brain and nervous system had reached required some very delicate dissection work.
37. By any normal standards, the whole enterprise was seriously demented in its thoroughness but Coghill knew what he was

⁹ Ibid. p34

after and this was the way to get it. It gives a very good picture of the standards of scientific observation which a top-class scientist like Coghill sets himself.

38. The end result of all the work was that Coghill had an extraordinarily detailed knowledge of how the neuromuscular system of the amblystoma developed in these early stages.
39. In the mid-1920s, following various political and academic upheavals at the University of Kansas, he was appointed Professor at the Wistar Institute – a long-established medical research centre in Philadelphia in 1925. By then he was aged 54.
40. This was the first time he was financially secure and he was also free of teaching duties. His scientific reputation was growing and he had received a variety of honorary degrees and awards. He gave the series of lectures in University College London in 1928 which were published as *Anatomy and the Problem of Behaviour* which did his international reputation a great deal of good.
41. For a while everything seemed wonderful and there were plans to set up a new research facility at the Wistar Institute in which a laboratory for Coghill would be the centrepiece. Then things started to go badly wrong. Coghill began to suffer from serious heart problems. There were also major difficulties in the construction of his new laboratory.
42. Then he and the Director of the Institute had a major falling out in 1931. Coghill had very high moral principles and was completely inflexible in his application of them. The big problem was that the Director of the Wistar Institute was exactly the same.
43. After his row with the Director, he was more or less ostracised in the Institute and refused any further research funding and assistance. But although he had to do everything himself he kept up his research. Then he had a major heart attack.
44. In 1935, when he was making a recovery from that and was beginning to get back into his research work, he went on holiday. While on holiday, he was told he had been sacked from the Wistar Institute and his salary was stopped. He was 63 at the time.
45. His wife asked that a member of the family should be allowed to go to his laboratory and sort out his papers but they

were dumped at his home. One of his loyal assistants at the Institute recovered a pile of his papers from a waste basket but there is no way of knowing how much, if any, of his work was lost.

46. Because of his poor health, he was medically advised to move to a better climate and he retired to Gainesville in Florida where he used a small inheritance to buy about 20 acres, 8 ha, of farmland near the University. Because of his scientific reputation, he managed to get a small research grant from an American foundation and he built himself a house and a laboratory.
47. He patched things up to a certain extent with the Wistar Institute and they agreed to lend him papers and research material prepared under his direction. It is interesting that though the Wistar Institute still operates as a major cancer-research centre, I could find no mention of Coghill in any of its on-line archives or history. He has obviously been written out of its history.
48. After all the troubles he had been through, Coghill actually had a peaceful and productive time in Gainesville. He got the farm working and trebled it in size so that he could earn an income from it. He managed a substantial amount of research work, moved on from amblystoma to the study of opossums, and produced a series of papers on them.
49. It was when he was in Gainesville that he learned about the Alexander Technique in 1939 – just two years before he died. It was through an article written about Coghill by an American journalist, Arthur F. Busch, who happened to be a pupil of A R Alexander. In this article, Busch said that Coghill's work confirmed "*the scientific basis of Alexander's practical work.*"¹⁰
50. This was brought to F M Alexander's attention in London and led to a correspondence between Busch, Coghill and Alexander, and Alexander sent Coghill copies of MSI and CCCI. There is an account of this whole episode in the book *More Talk of Alexander* by Wilfred Barlow.
51. Coghill wrote to Alexander about the books

I am reading these with a great deal of interest and profit, amazed to see how you, years ago, discovered in human physiology and psychology the same

¹⁰ Barlow (1978)p256

*principles which I worked out in the behaviour of lower vertebrates.*¹¹

52. After the outbreak of the Second World War, Alexander who was then in his early seventies, was persuaded for his own safety to go to America. There was genuine fear that Britain would be invaded by Germany and Alexander was reputed to be on Hitler's wanted list because of some of the things he had said about Germany in MSI.
53. Among those doing the persuading was Sir Stafford Cripps - a pupil of Alexander's who also happened to be the Chancellor of the Exchequer.
54. Because of his contact with Coghill, Alexander made a point of visiting him in Gainesville in February 1941 but by this time Coghill was in very poor health suffering from arthritis and a very bad heart. Alexander talked with him and worked with him over a whole weekend and they got on very well. In a letter to Walter, Alexander described the work with Coghill as "*his longest session*".¹²
55. In a letter to a friend after he had been visited by Alexander he said
- Mr Alexander seems to me to be a very unusual man. He has grasped the same scientific principles through practical work with human beings that I have found through my investigations of detailed anatomy in the lower forms.*¹³
56. Because they had got on so well, Alexander asked him to write a foreword to UCL and Coghill did so even though he was a desperately ill man. He finished it just a few weeks before he died of heart failure in June 1941 at the age of 69.
57. In his biography of Coghill, Herrick says that
- ...Coghill lived to see world-wide interest in his program, numerous investigations instigated or influenced by his findings, and a new school of thought developed around the Coghillian conceptions of the patterns of vital processes. The contagion of these ideas is explained by their originality, by the adequacy of the evidence by which they were validated, and by*

¹¹ Ibid. p257

¹² Alexander (1946)p234

¹³ Ibid. p234

*the competence, honesty, and enthusiasms of their author.*¹⁴

58. As I have said, Coghill was a very austere and dedicated man. He had a very noble idea about what it was to be a scientist, describing it

*The life of science is a life of enquiry. I speak of the 'life of science' as one speaks of carpentering, blacksmithing, teaching, preaching doctoring, or whatever else one does as a vocation. The spirit of science is the spirit of devout enquiry into the truth of things as opposed to a life of fixed opinion; a life of delayed reactions as opposed to a life of immediate response; a life of suspended judgement as opposed to a life of intolerant, final decision.*¹⁵

59. To sum him up, there is no doubt about Coghill's significant place in science. He was not one of the international giants but he was a substantial figure in the development of our understanding of the overall development and functioning of the neuromuscular system.

60. We certainly can be glad that such a distinguished man of science was prepared to endorse the AT writing his appreciation. The other and even more important point is that he contributed to our understanding of the underlying neuroscience of the AT – and that is what I will look at the next time.

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¹⁴ Herrick (1949)8

¹⁵ Ibid. p5