



PG and D'Arcy

Entangled Lives Through Form and Function

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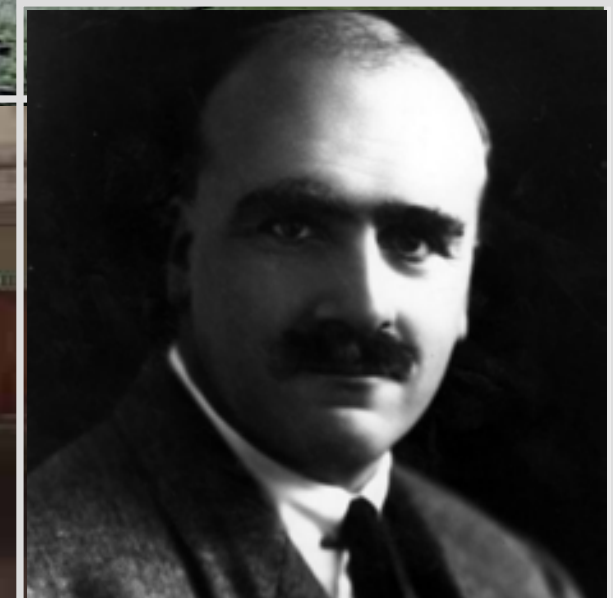
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Outline

- Our Story Begins: in UCL in the Haldane Room
- And Thence to Edinburgh, Cambridge and London
- Colleagues and Friends: University College Dundee
- The Letters – A Story Barely Begun
- Views About Evolution
- ***Cities in Evolution – On Growth and Form***
- Leaving Dundee:
 - D'Arcy's Career Blossoms: PG's Takes a Strange Turn*
- Later Years: At PG's Funeral
- The Perils of Historical Biography

Our Story Begins: in UCL in the Haldane Room

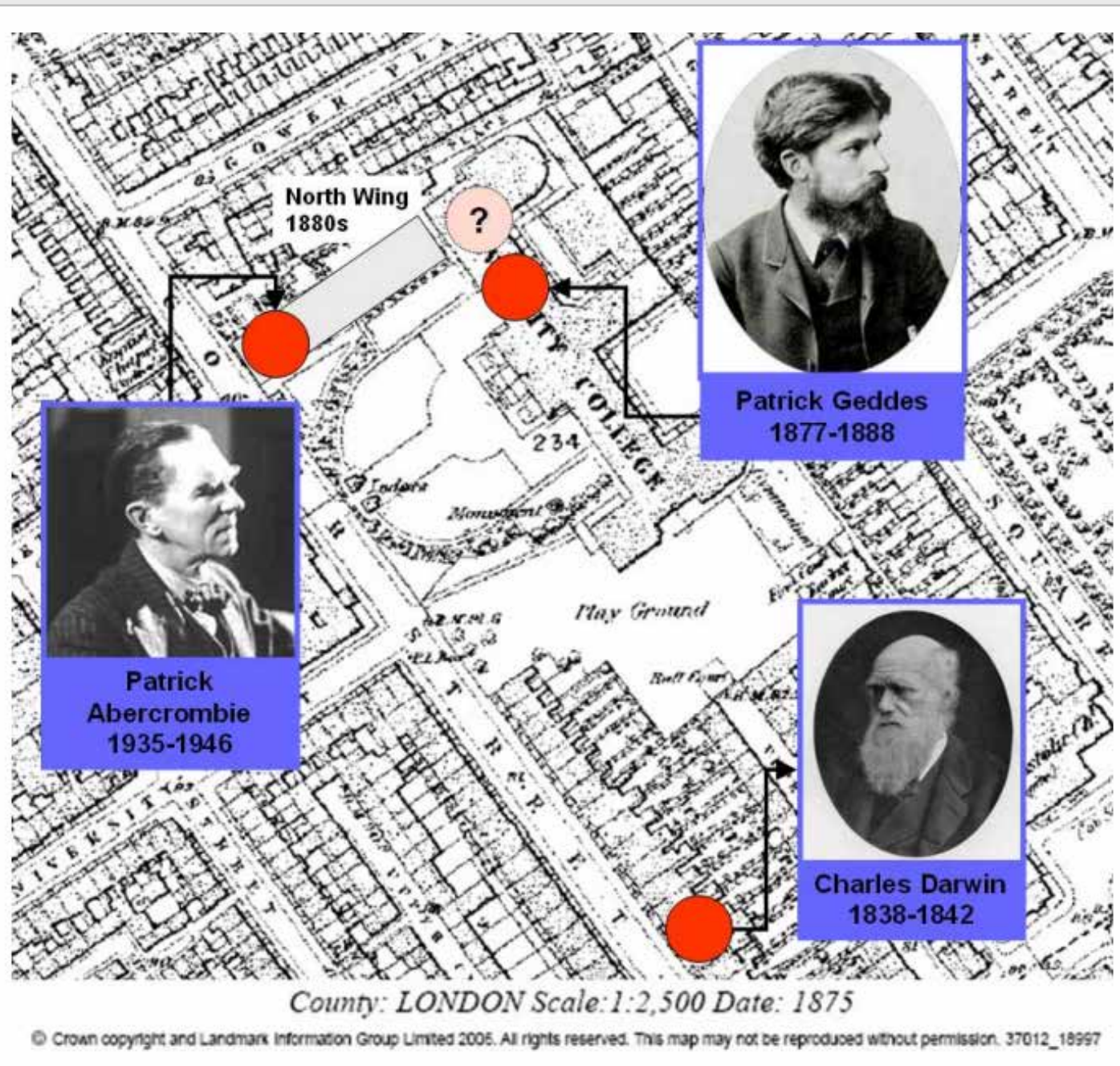


J. B. S. Haldane – the scourge of UCL – the Haldane room was the mixed common room in the 1920s but 60 years before it was the room that housed the first Physiology Department in the world

It was here that a young Patrick Geddes who was an instructor for one year in 1878-9 met Charles Darwin who made it a habit of visiting UCL when up in London from the Down House where he lived.

Darwin of course had lived in a house in Gower Street in the 1840s and knew Burdon-Sanderson who was then the chair of Physiology rather well.

Burdon-Sanderson I hear you say – wasn't this the two middle names of JBS ? Yes but before the plot unravels let us say something more about Geddes at UCL because there are other connections



Indeed it is entirely possible that Abercrombie never even knew that Geddes was at UCL (although we judge this unlikely as they must have met several times in the early 20th century and presumably conversed socially). But they were very different people as the following passage from Abercrombie when they met at the Town Planning Exhibition at Burlington House in 1910 makes clear: Abercrombie (see previous footnote †) says of Geddes' exhibit at the Exhibition:

“Within this den sat Geddes, a most unsettling person, talking, talking, talking – about everything and anything. The visitors could criticize his show – the merest hotch-potch – picture postcards – newspaper cuttings – crude old woodcuts – strange diagrams – archaeological reconstructions; these things, they said, were unworthy of the Royal Academy – many of them were not even framed – shocking want of respect; but if they chanced within the range of Geddes' talk, henceforth nothing could medicine them to the sweet sleep which yesterday they owned. *There was something more in town planning than met the eye!*” (pages 128-129, 3rd edition, 1959; *our italics*).

At that point, neither Geddes nor Abercrombie would know how their lives might entangle across time and space for the Department of Town Planning had not yet been established at UCL. When it was, there was no sense in which Abercrombie could ever have thought he might end up there for he then spent 20 years or more as Professor at Liverpool before he made the journey south. In fact when Abercrombie eventually came to UCL, Geddes was dead and it had been 60 years since he, Geddes, had worked in a lab some 200 yards or so from Abercrombie's office.

And Thence to Edinburgh, Cambridge and London

So where does D'Arcy fit into all of this? Well he was born in the same year, lived in the same street and attended the same school as JBS's father – John Scott Haldane – at the Edinburgh Academy. They both studied medicine at Edinburgh – in fact most of the characters in this study did !

But D'Arcy left for Cambridge to study zoology/biology largely because he got some sort of scholarship.

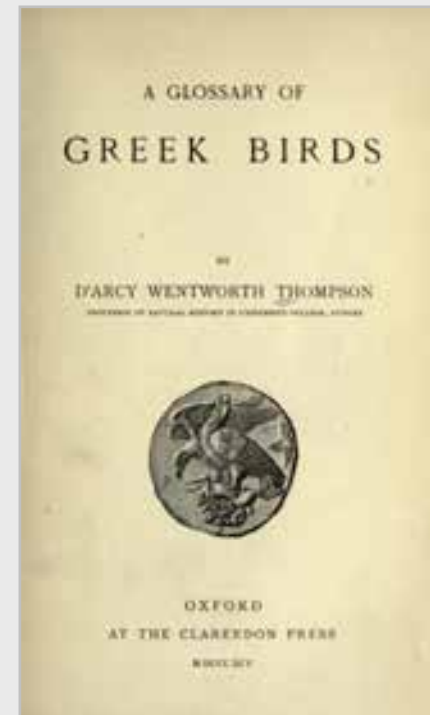
PG had left in much more maverick style after one week's biology at Edinburgh to sit at the feet of Huxley in the Royal School of Mines – ultimately here in Imperial, And PG followed a much less conventional path from then on

D'Arcy met all kinds of influential people in biology there such as Francis Balfour and Michael Foster – and this established him as key to the emerging generation of biologists as reflected in the family tree I will show you next

PG also met a much wider array of people in his years in London – he has a much less conventional early career – no degree – back to Edinburgh as a demonstrator in 1880 – a succession of failed chair applications – regarded even then as a maverick but a very clever one with a fair number of publications – but already not narrow enough for a Chair in Biology.

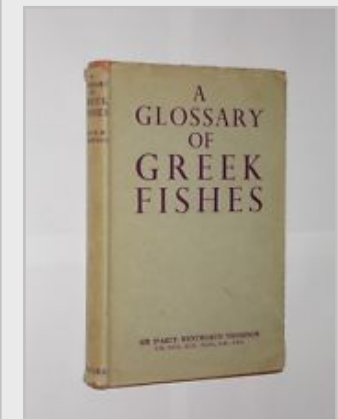
In fact he competed for Dundee against D'Arcy and D'Arcy won in 1882 when D'Arcy was only 22

But D'Arcy also fell foul of the establishment in not getting a Fellowship at Trinity despite his connections and high honours - he did not publish the right stuff

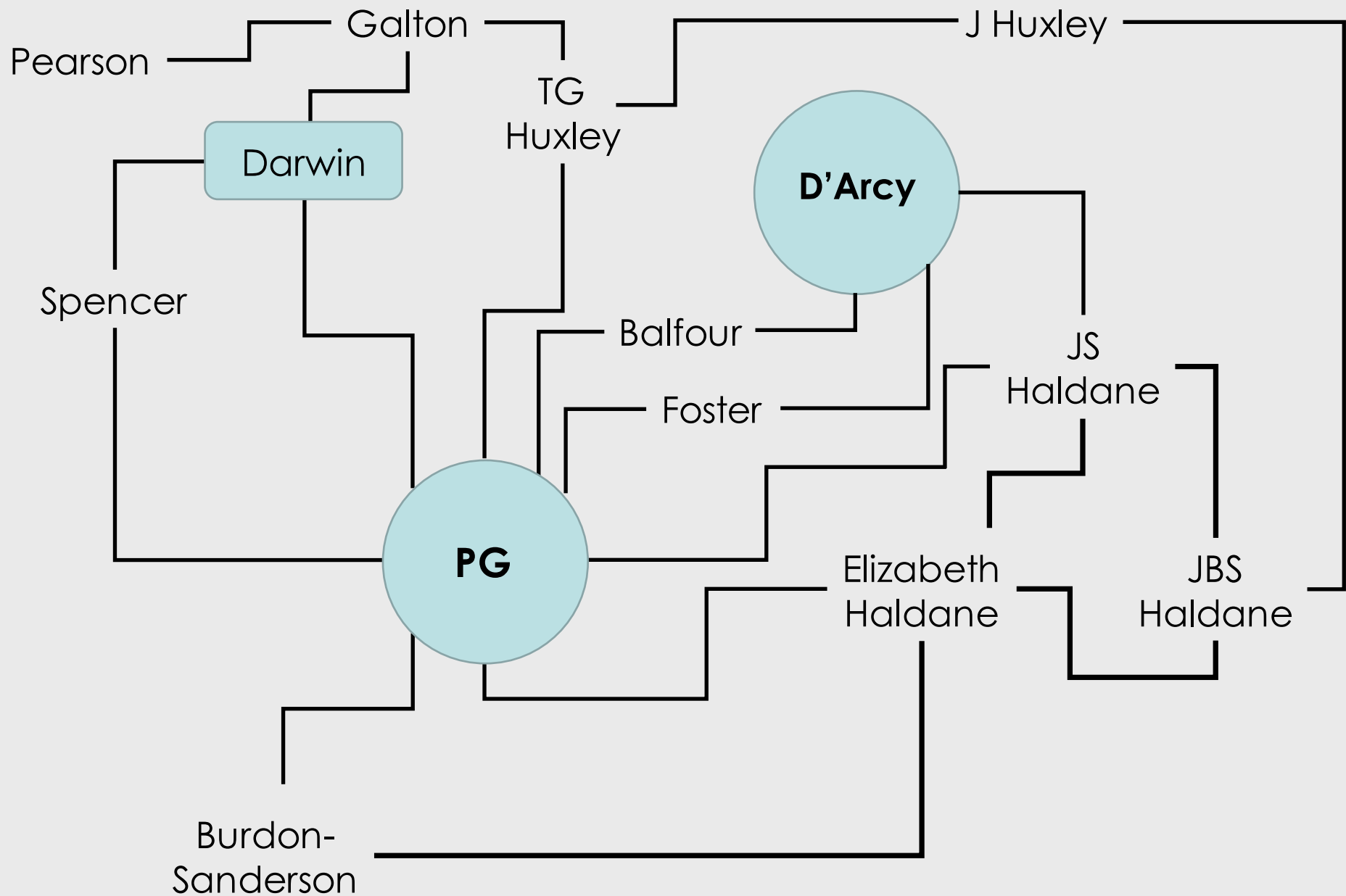


← 1895

↓ 1947



By that time, Geddes was deeply immersed in social reform in Edinburgh as well as biology and had begun his wanderings



Colleagues and Friends: University College Dundee

I could spend the rest of this lecture on Geddes and D'Arcy at Dundee but although they were in the same department for 31 years – D'Arcy 1882-1917 and Geddes from 1886-1919 – they did very little together

PG only spent the summer term there and basically spent his time in Edinburgh renewing the Old Town and producing various exhibitions about social theory and town planning

D'Arcy basically was central to the College at Dundee but also spent a lot of time on various commissions.

Both men spent a lot of time applying unsuccessfully for Chairs elsewhere due to lack of suitable publications

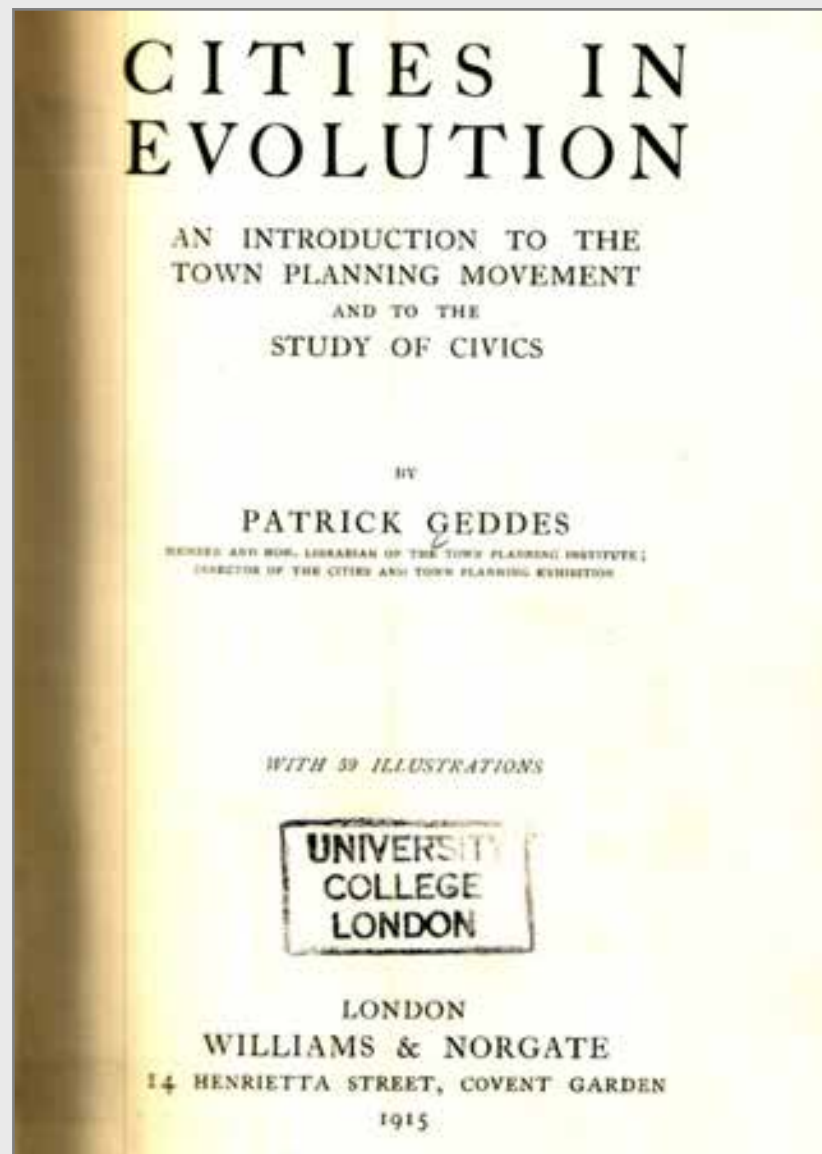
Here are the two famous photos I think of 'the professors' in the tiny University College Dundee in 1888. Geddes on the left, then they swapped around



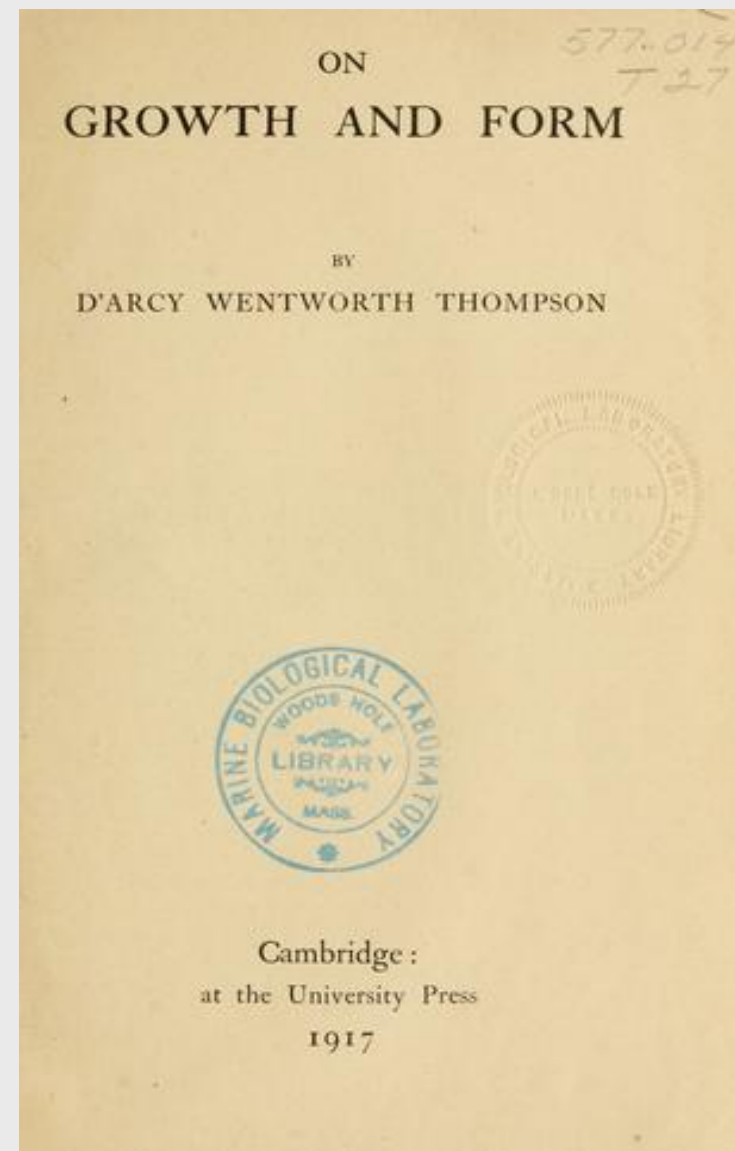
And their famous books but before then I am guessing that there was some mirth in the photograph



RGS-IBG Conference 2017: Celebrating a Centenary: *On Growth and Form*



1915



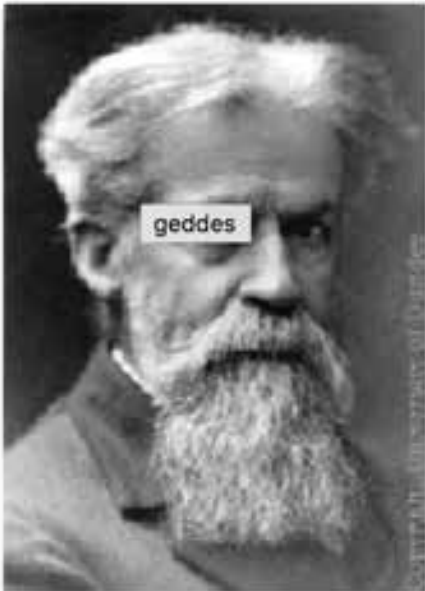
1917



D'Arcy Wentworth Thompson (1860-1948)

D'Arcy Thompson became Professor of Natural History at University College, Dundee in 1885. He felt it was imperative that he had a zoology museum for teaching his subject and set about acquiring specimens. His study is said to have been jam packed with specimens in every corner and filling every shelf. By 1917 when he left to take up a chair at St Andrews University there was a great museum including one of the best Arctic Zoological Collections. Much of the collection was dispersed in 1956, but what remains forms today's [D'Arcy Thompson Zoology Museum](#). It is these specimens that D'Arcy used in writing his masterpiece *On Growth & Form*, published in his last year at Dundee.

See the [Zoology Museum](#) webpages for more information.



Patrick Geddes (1854-1932)

Patrick Geddes is a man who has left echoes of his influence in many areas of modern study - biology, town planning, sociology and ecology.

He was given a part-time post in Dundee in the Chair of Botany in 1888 teaching only in the summer term. He stayed in at Dundee for 30 years.

He started the post with the ambition to make the best of being part of a small unit: "Here I can plan things exactly as I want them. I may have the smallest botany department, but I intend to make the most effective garden for teaching in the British Isles".

Geddes is said to have been an unconventional though inspiring Teacher. His philosophy reverberates down the century with a message just as current today. He appealed to planners and architects to survey physically in all possible aspects (geographical historical, cultural, economic social) the areas that they were asked to develop or restore.

Find out more about Geddes on the [Artist & the Thinker](#) website.

The Letters – A Story Barely Begun

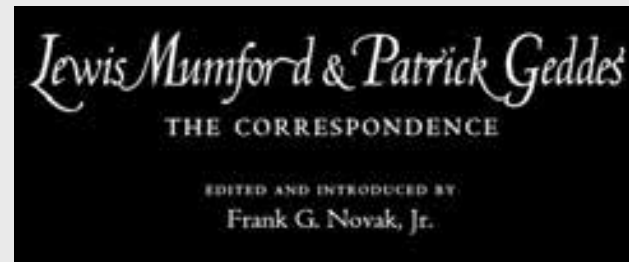


Stephen has looked at the PG letters for our previous papers but not with respect to correspondence with D'Arcy

I have looked at the index and could not find more than handful of refs to D'Arcy – less than D'Arcy to PG

Matthew Jarron has looked at the D'Arcy letters with respect to mentions of PG – there are half a dozen or so but mainly about domestic things – PG trying to get a job in D'Arcy's lab for his daughter Nora

It is amazing that there is no more than this as people in those days wrote hundreds of letter – the mind boggles – look at the book



Views About Evolution

And the lack of any synergy on biological work or on form and function is mystifying, quite mystifying

We cannot tell you in detail all about what PG and D'Arcy thought about Darwin but suffice it to say they were both sceptical evolutionists

PG was a social evolutionist, much influenced by Herbert Spencer and then by a host of sociologists from H. G. Wells to Indian mysticists and physicists such as Jagardis Bose

D'Arcy believed that animals and plants changed more in terms of their form (which was contained in their DNA) as a diagram of forces and argued this was central to the way animals transformed through their life as well through generations.

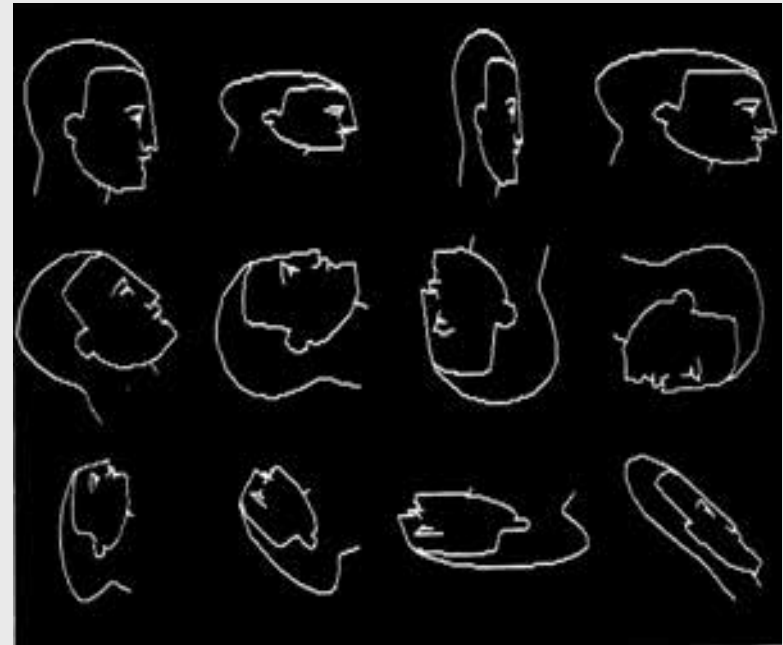
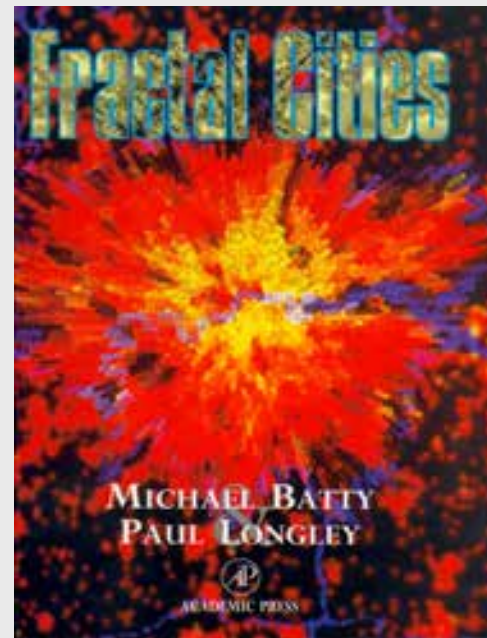
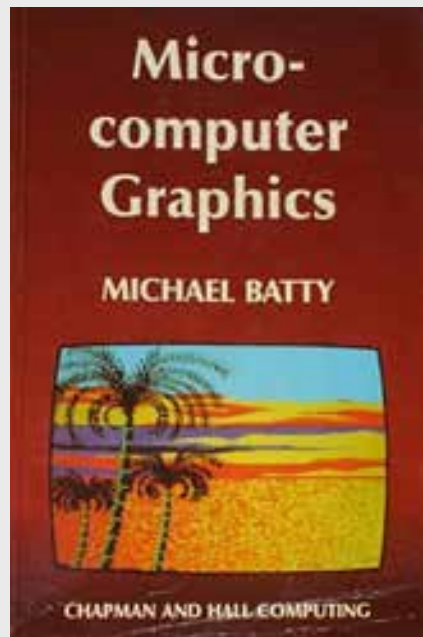
In our own field – about cities and their growth and form and function – our concern for PG relates to the fact that he sat aside the essential tension that pervades thinking of cities as evolving from the bottom up whereas their planning is from the top down.

He found this hard to reconcile with pure evolutionism of Darwin and as his life continued he became more and more a conventional town planner – top down

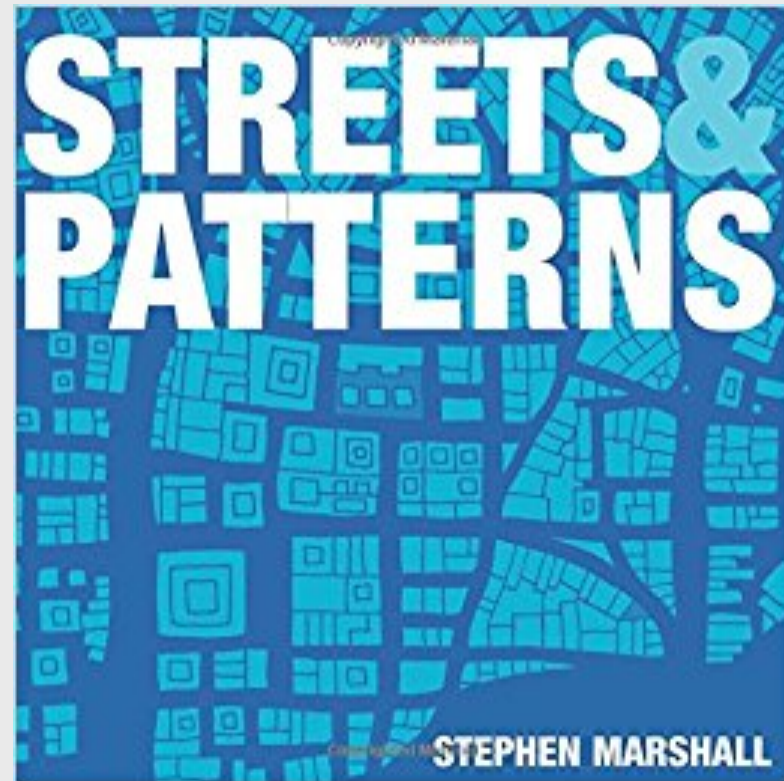
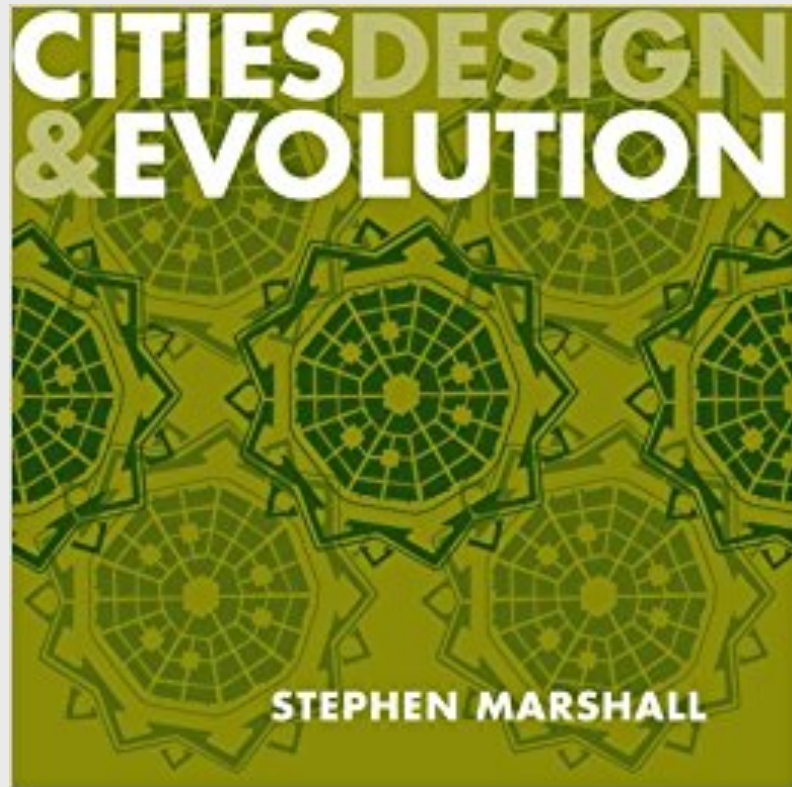
D'Arcy did so little ***On Growth and Form*** in his early career that his book must have come as a great shock to the biological world. Here was a man of letters and of fishes and the sea producing what came to be the book extraordinaire on mathematical biology.

Our focus in our research work is on city shape and thus all D'Arcy's work on transformations is key but no one has to our knowledge actually transformed a city as it grows into the kind of thing D'Arcy did for fishes.

I did some work on transformations when learning about graphics programming that led to our fractals work but that is a long story I cannot relate here

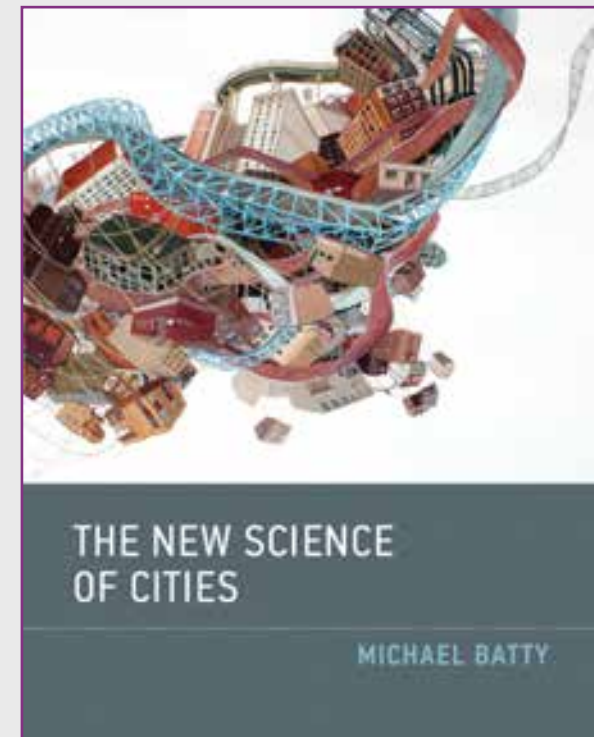
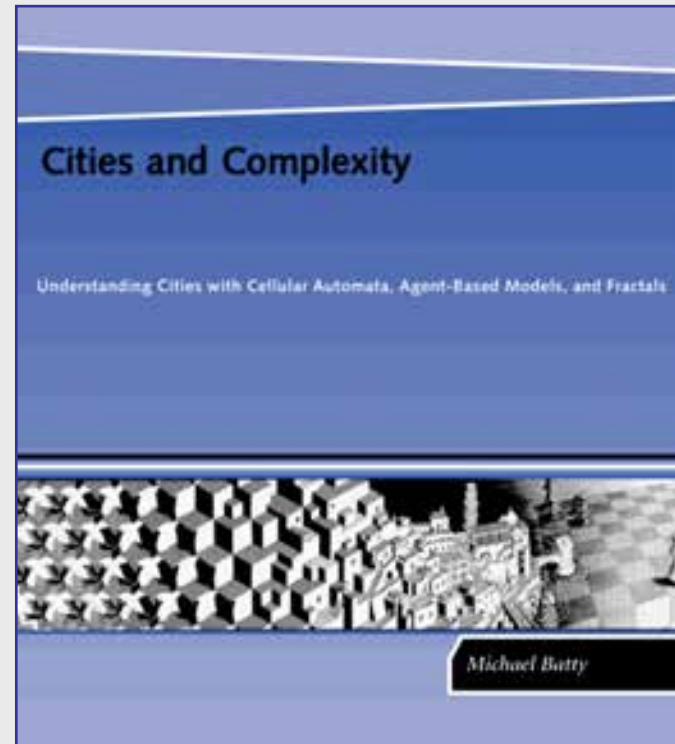
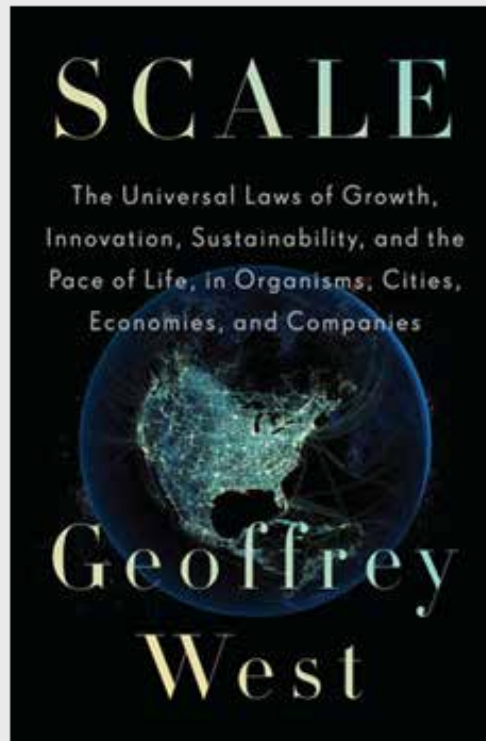


Stephen has done lots of things about thinking of cities as organisms – and hence our collective interest in these two pioneers



We have little time to discuss all of this here but some great conundrums remain

And there is lot more relating to scale and allometry an so on that we need to explore all this in regard to PG and D'Arcy



If I have time I need to say something about the two great books from PG and D'Arcy

Cities in Evolution

PG's book was written as early as 1905 but he was too busy to produce it properly and it was scrappy by the best of standards. It is more a testament to his life's work than a treatise that we can get much from

True he introduced terms like conurbation there and even megalopolis but

To show how influential it was, the only book that relates to my high school was the fact that I chose this as my school prize for Geography A level.

Stephen and me have dissected the book but it remains an enigma as does the man himself.

We wonder if it will survive this century – it is too arcane and too messy and without a clear message.

On Growth and Form

But D'Arcy's book will probably survive. However, we are only aware of one paper by D'Arcy before his book was published in 1917

XXVII.—**Morphology and Mathematics.** By D'Arcy Wentworth Thompson.

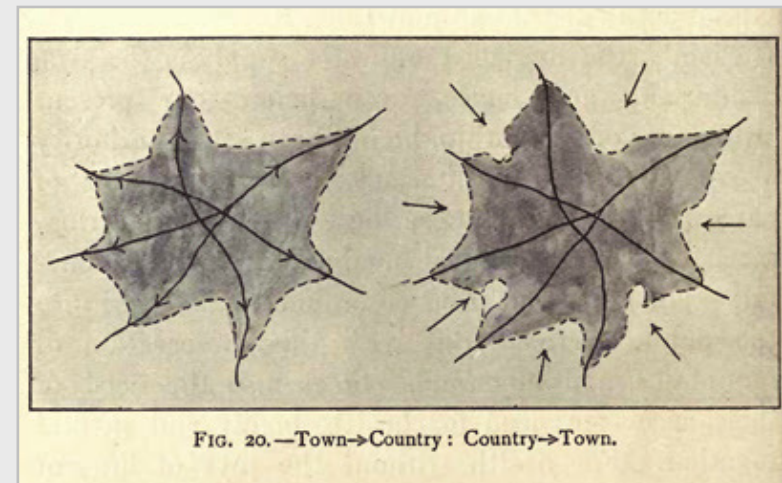
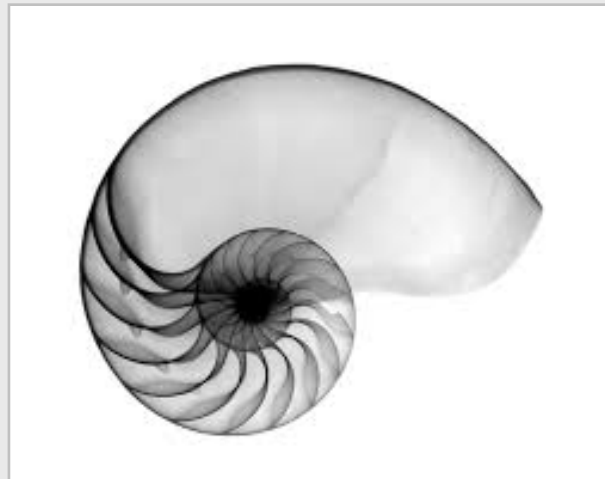
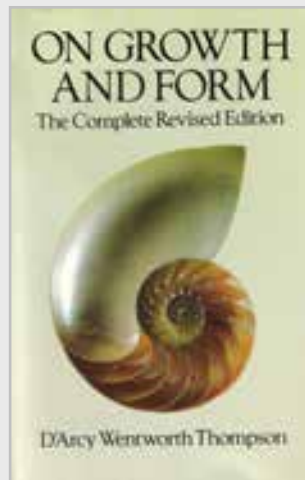
(Read December 7, 1914. MS. received February 1, 1915. Issued separately June 22, 1915.)

The study of Organic Form, which we call by GOETHE'S name of Morphology, is but a portion of that wider Science of Form which deals with the forms assumed by matter under all aspects and conditions, and, in a still wider sense, with Forms which are theoretically imaginable.

The study of Form may be descriptive merely, or it may become analytical. We begin by describing the shape of an object in the simple words of common speech :

We are aware of the fact that he could splendidly entertain his audience with some erudite maths but only one paper. This is the biggest mystery. What did people like Haldane think when D'Arcy produced his slow burner in 1917?

Another slight mystery is that both PG and D'Arcy did not exploit the visual medium to the extent that would be followed today. In PG's case the first edition of his book has a number of illustrations but mainly pictures and photographs. Of course D'Arcy went further in his work on transformations. Nevertheless both of their approaches are rich with visual hints and growth, form, function, and evolution are concepts that are highly visual



Leaving Dundee: *D'Arcy's Career Blossoms: PG's Takes a Strange Turn*

D'Arcy went across the water to take the chair of biology at St. Andrews in 1917 – just as his book was published – and his career went from strength to strength – he became central to British science and lived a long life til 1948

PG went in 1912 to India – God knows why – we have searched in vain for the reason why he left Britain and Edinburgh virtually for good

His book did not raise the storm that D'Arcy's did. He then left Dundee somewhat under a cloud – to say he was not valued by the University administration is an understatement.

But he was always a wanderlust – as you can see →→

The opening of the Hebrew University of Jerusalem (painted between 1925-1927)



The painting shows The Earl of Balfour addressing the 7,000 people present at the opening of the Hebrew University of Jerusalem on Mount Scopus on 1st April 1925. Among the dignitaries present were the British High Commissioner Sir Herbert Samuel, Field Marshal Viscount Allenby, Chaim Weizmann, Ahad Ha'am, Chaim Bialik, as well as representatives from many governments, universities and academic institutions worldwide.

Later Years: At PG's Funeral

After PG left Dundee, he never really came back to Britain. He was in India and then in Jerusalem and then he set up his 'Scots College' in Montpellier in France as a kind of Geddes-like Esalen.

He never wrote his great book, in fact his publications and his diagrams became even more arcane. He was knighted in 1932 and died a few months after at Montpellier.

We (Stephen Marshall and myself) are painfully trying to unpick his work and discover the great message. But in many ways although very different from D'Arcy, his impact has been enormous, but not through his book.

This is what was said at his funeral – and I guess D'Arcy must have attended it – in Montpellier? This throws a different light on their friendship

In his lifetime Geddes was far from being an honoured prophet in Great Britain. For example, when he gave his public Farewell Lecture at University College, Dundee after 30 years of service, it was his students and not colleagues who came to hear him. But after his death, fellow-academics were able to appraise him more objectively and, in consequence, more generously. A good case in point is the discussion which arose after the biography of D'Arcy W. Thompson, Professor of Zoology at Dundee, appeared in 1958. One reviewer declared, in the 'Times Literary Supplement' of 4 July, that 'A biography of Thompson which makes only four perfunctory references to Geddes can therefore, hardly be considered adequate.' A reader commented to the 'Supplement's Editor that though colleagues at UCD for almost thirty years, P.G. and D'Arcy were not intimate friends, and hinted that the latter was being confused with P.G.'s former pupil J. Arthur Thomson. Whereupon another reader quoted Professor W.J. Tulloch of Dundee as informing him that Geddes and Thompson 'did see a good deal of each other ... and that their conversation was lively, entertaining and friendly.'

The most significant tributes to Geddes, however, were these. Nearly half of 'The Times' review of Thompson's biography was devoted to his colleague P.G., including this assertion: 'Geddes was one of the greatest and most obscure influences on our times. Europe and Asia are equally in his debt.' And on 15 August 1958 the biographer herself (D'Arcy's daughter, Ruth Thompson) wrote to 'The Times' explaining that she had been too young, at the time her father was in Dundee with P.G., to be interested in his opinions of colleagues. However, she wished to relate the following story* which she had 'heard for the first time last week':

After Patrick Geddes's funeral my father and a few friends talked together of his life and work. My father spoke at length and when he ceased one of his colleagues said, 'But, D'Arcy, you speak as if Geddes had been the best man of all of us.' To which my father replied, 'Well, wasn't he? '**

* Lewis Mumford has told the author how, in justice to P.G., he took care to end his 'Disciple's Rebellion' with this same 'stunning quotation' from D'Arcy Thompson.

** A similar comment was made by D'Arcy Thompson on 27 April 1938 in an address on the Dundee Social Union, 'Fifty Years Ago and Now'. Describing the 'remarkable band' of young professors at UCD, he said: 'Lastly came Sir Patrick Geddes, as great a man as any there'.

From the best book on Geddes by P. Boardman (1944, 1977) ***The Worlds of Patrick Geddes: Biologist, Town Planner, Re-educator, Peace Warrior***, Routledge, London

The Perils of Historical Biography

We still do not have any feel if D'Arcy and PG were close friends – we think not – but we are also intrigued by the fact that they never related their own work in print, lectures or in fact in letters. There are very few letters

It may be explicable in very simple things. D'Arcy was primarily interested in the sea, PG in the land, D'Arcy in fish and birds, PG in people.

It may have been to do with the fact that they competed for the first job at Dundee and PG lost.

They were both mavericks and both men who wrote books that outlasted the century they were written in: no mean feat, ***in fact the ultimate accolade***



Thanks

To Kate Henderson for letting us use her panel picture which was inspired by both PG and D'Arcy



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Some articles on PG

from darwinism to planning – through geddes and back

One hundred and fifty years after the publication of *On the Origin of Species*, urban theorists are giving renewed attention to Darwinian interpretations of urban change, beyond those pioneered by Patrick Geddes over a century ago. Stephen Marshall and Michael Batty suggest some implications for urbanism and planning

Since the publication of *On the Origin of Species* 150 years ago this month,¹ Darwin's theory of evolution has not only had a revolutionary impact on natural history and the life sciences, but has also helped to prompt the emergence of disciplines such as ecology, zoobiology and evolutionary psychology. It has also given rise to evolutionary interpretations of topics as diverse as linguistics, economics and the history of technology. Evolutionary theory has even had an impact on the field of town planning, principally through the pioneering work of Patrick Geddes.

However, while Geddes' planning ideas are well known, his biological theories are much less well understood. In fact, Geddes' view of biological evolution differed substantially from Darwin's, and planning theories based on Geddes' ideas are to some extent based on his particular brand of evolutionism, rather than on classical Darwinism. Conversely, more recent urban theory has revisited evolutionary interpretations of cities that depart from Geddesian evolution and are more akin to Darwinian evolution. This could be said to bring town planning and urban theory more firmly into the field of Darwinian-evolutionary applications. This article briefly outlines Patrick Geddes' evolutionary ideas as applied to town planning, and then reports on recent research that relates urban theory more directly to Darwinism.

Patrick Geddes – biologist turned town planner

Geddes originally trained as a biologist, somewhat unconventionally under the tutelage of his mentor Thomas Huxley in the 1870s in London, where he also met Darwin. Although his interests in optics and sociology dominated his working life, his belief in evolution as the underpinning science of cities, substantiated in his book *Cities in Evolution*, published in 1915.²

Yet Geddes' own ideology of planning was fraught with tensions, apparent in the conflict between solving local problems collectively from the top down and the workings of evolutionary processes which suggest that fitness for purpose emerges from the bottom up. Confronted with his interests in vitalism and holism, Geddes' message often appears as a bundle of contradictions. In fact, he is best known for the study of 'towns', his quest for regional planning, the local/global conundrum, terms such as 'conurbation' and 'megacities', and much else besides – but less well known are his particular views on evolution and how they might inform urban planning.

It has taken a hundred years for Geddes' message, built on his understanding of Darwinism, to begin to penetrate our theories about how cities grow and change and how we might develop

TFR, 80 [6] 2009 doi:10.3828/tpr.2009.12

Michael Batty and Stephen Marshall

Centenary paper

The evolution of cities: Geddes, Abercrombie and the new physicalism

One hundred years ago, the first coordinated reactions to the urban chaos of the industrial revolution were being established through a system of centralised planning, while the rudiments of a theory underpinning this collective action were also being fashioned, through the writings and rhetoric of Patrick Geddes.

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Thinking organic, acting civic: The paradox of planning for *Cities in Evolution*

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HIGHLIGHTS

- Patrick Geddes introduced the theory of evolution to city planning over 100 years ago.
- His evolutionary theory departed from Darwin in linking collaboration to competition.
- He wrestled with the tension between bottom-up and top-down action.
- He never produced his magnum opus due the inherent contradictions in his philosophy.
- His approach resonates with contemporary approaches to cities as complex systems.