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Cambridge Phenomenon

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Abstract: The ‘Cambridge Phenomenon’ is held out as an exemplar of technology transfer: part of the international circuit of ‘innovation tourism’, a university city of only 125,000 people, which over the past 50 years has generated 14 ‘billion-dollar corporations’. However, this review article of two related publications on the phenomenon highlights its counterintuitive nature: not the outcome an over-arching strategy but held back by planning regulations, with many commercially-successful start-ups originating in blue-skies not near-to-market research. The role of the University of Cambridge, while critical, has been largely indirect: shared values of social impact, entrepreneurial faculty and graduates, but relatively few formal spin-outs. While Cambridge provides useful evidence for theories of cluster growth, individual circumstances remain critical for ecosystem development. Cambridge itself today faces serious challenges in maintaining momentum: its largest firms have all been acquired by overseas purchasers and further growth will require a more strategic approach to planning.

Keywords: Cambridge Phenomenon, Cluster, Innovation, Enterprise, Impact

1. Introduction

This review article describes the ‘Cambridge Phenomenon’ as an exemplar of technology transfer. It uses two newly published books as a platform to ruminate on the theory and practice of cluster growth:

- *The Cambridge Phenomenon – 50 years of innovation and enterprise*
Kate Kirk and Charles Cotton
Third Millennium Publishing, London (2012) [1]
- *The Cambridge Phenomenon – Global Impact*
Kate Kirk and Charles Cotton
Third Millennium Publishing, London (2016) [2]

2. ‘If It’s Tuesday, It Must Be Cambridge’

A few years ago, an article in the *Financial Times* about Silicon Valley triggered wry recognition among practitioners in the Cambridge technology cluster. Implausibly short visits with overstuffed schedules undertaken by executives of large corporations or the media to the

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Valley (ostensibly to learn the secrets of disruptive digital new firms likely to eat their corporate lunch) were dubbed ‘innovation tourism’ by one anonymous Stanford University affiliate [3]:

The supplicants are largely unprepared and typically stay for a week, sometimes touring companies such as Google, Facebook and Cisco in organised groups that wouldn't look out of place in the Sistine Chapel. The VIPs among them are given something to talk about when they get home, like a spin in Google's driverless car or a chance to graze at the sushi and barbecue bars in Facebook's free canteen.

Another staging post on the innovation tourism circuit, Cambridge provides equivalents for Facebook's canteen in *The Eagle* pub (where in February 1953 Francis Crick and James Watson announced their discovery of how DNA carries genetic information) or the *Baron of Beef* (alleged scene of the legendary falling out between two luminaries of Sinclair Instruments over the decision of one of them to throw in his lot with Acorn Computers, makers of the BBC Micro, a major driver of computer literacy in the UK in the 1980s). Cambridge Science Park, the Hauser Forum or St John's Innovation Centre serve as old-world stand-ins for the Google campus or Stanford's Main Quad. Wry recognition arose because with many of the tours we host any lasting or substantive learning on the part of our visitors is at best improbable. Tourists – from overseas governments, major corporations or technology transfer offices – would leave with the same preconceptions about Cambridge as those with which they arrived, no matter how frequent, forceful or carefully-crafted the message to the contrary we deliver may be.

It was partly to dispel the myths and convey a more nuanced truth about the origin and evolution of the Cambridge technology cluster that Charles Cotton founded The Cambridge Phenomenon Ltd in 2009. CPL is a vehicle for assembling the often-fragmented material concerning the rise of hundreds of small, innovative firms, weaving the fragments into a comprehensive narrative and, by turning the story into substantial but accessible books, enabling innovation tourists to leave Cambridge with something more insightful and compelling than a T-shirt. Visitors studying the *Cambridge Phenomenon* books after returning home might finally come to understand that this history is both more contingent than they expected (the technology cluster very nearly did not happen, could easily have been derailed at numerous junctures and may yet unravel as burgeoning not-in-my-back-yard planning sentiment constricts further growth) and conceptually challenging to ‘apply’ as a template elsewhere in the world.

The two publications are complementary, with the first [1] providing an overarching historical narrative (the ‘how’) and the second [2] focusing more on individual companies or sector trends (the ‘what’). A third volume would be required for the more elusive analysis of underlying causes (the ‘why’): what enabled the Phenomenon to happen when and where it did, or what policy lessons (if any) does it contain for other locations.

At this juncture I should disclose my interests. I served on the editorial board of both books, and the St John's Innovation Centre of necessity appears in the narrative, as do numerous companies who began life in the Innovation Centre.

3. The Cambridge Cluster Today

Defining the Phenomenon opens some of the most finicky issues right from the outset: what is included in the Cambridge cluster? And how to measure its outcomes?

The simplest definition would cover the several thousand firms formed mostly since the 1960s to commercialise technology and biotechnology discoveries, together with associated support-service firms (patent agents, investors, science parks) based in or around Cambridge. Adopting approximately this 'open' definition, the University of Cambridge produces a short fact-sheet, updated on an *ad hoc* basis. Some of the differences over time reported in the fact-sheet point to wider definitional questions. For instance, in January 2014 1,500+ *technology-based firms* were reported in the Cambridge cluster; by May 2016, this was changed to 4,300+ *knowledge-intensive firms* (emphasis added).

Behind the definitional change bubble numerous issues, not least the practical impossibility of saying with certainty at exactly which point a technology firm becomes a service firm: one of the biggest contributors to the success of the cluster, as Kirk and Cotton argue, was the group of technology consultancies - such as Cambridge Consultants, TTP or Sagentia - many of which evolved out of each other. Using 'knowledge-intensive' rather than 'technology-based' as the criterion avoids having to choose conceptual purity over practical impact. It also hints at the deeper point that the Cambridge cluster has no official or legal standing: it arose spontaneously out of scores of independent initiatives, without (and sometimes despite) government action.

The extent to which such 'splendid isolation' (to borrow the description of British foreign policy in the later nineteenth century) can continue is highly debatable. Other changes to the data reported in the University's factsheets are equally revealing, not least the omission in 2016 of how many billion-dollar companies originated in the cluster: a remarkable 14 were noted in 2014, of which two were valued at over \$10bn. But these were ARM and Autonomy, both of which have now been acquired by overseas buyers (Autonomy in 2012 by HP for \$11.7bn, a deal still subject to legal ramifications; and ARM in 2016 for \$24bn by Softbank). Such acquisitions leave open the question of whether Cambridge can truly support its successes beyond the scale-up stage to sustain global operations at the very highest level.

4. From Science Departments to Innovation Infrastructure

But this is to jump ahead. Part of the achievement of Kirk and Cotton is to explain how a small mediaeval market town (whose population today is still only around 125,000) morphed in under 50 years to a cluster spawning not just ARM and Autonomy (both rooted in computer science) but Abcam (an innovator in reagents, valued on the London Stock Exchange at over £1.4bn), Cambridge Antibody Technology (acquired by AstraZeneca for \$702m), CSR (fabless semiconductors, bought by Qualcomm for \$2.4bn) or Domino (inkjet printing pioneers bought by Brother for \$1bn) show the range of sectors emerging around Cambridge, as well as the increasing likelihood of take-over.

For simplicity, Kirk and Cotton chose 1960 as the start date for the modern Phenomenon, when Cambridge Consultants was founded to 'put the brains of Cambridge University at the disposal of British Industry':

A distinguishing feature of the Cambridge Phenomenon is the presence of a thriving mini-ecosystem of technology consultancies. Indeed, many claims that it was the founding of the first, Cambridge Consultants, in 1960 that sowed the seeds for the technology cluster of today, and there is certainly a rich legacy of growth, product successes, spin-outs and investments that can be traced all the way back to the founder of Cambridge Consultants, Tim Eiloart. ([2] p115)

The first recorded use of the term 'Cambridge Phenomenon' appeared in an article in *The Financial Times* in 1980 (by Peta Levi, coincidentally or not, cousin of serial entrepreneur brothers Charles and Jack Lang), noting the creation of 41 companies in the previous decade and Cambridge's leading position in computer-aided design. It resurfaced as the title of an influential economic review in 1985 published by SQW, a consultancy, and overseen by a committee chaired by Matthew Bullock, then a commercial banker helping pioneering start-ups, now Master of St Edmund's College in the University of Cambridge; longevity seems to be a feature of the founding generation. The 'Cambridge Phenomenon' then took flight in policy circles as an exemplar of how universities and technology industries could interact for wide social and economic benefit.

The Phenomenon's pre-history, from the foundation of the University (conventionally ascribed to 1209), through the establishment of the University Press in 1534 and the inauguration of the Cavendish Laboratory in 1874 (thanks in part to the intervention of the University's Chancellor, Prince Albert, husband of Queen Victoria and graduate of the University of Bonn, appalled by the lack of provision for modern physical sciences) provides few clues of what was to follow. One of the first start-ups *avant la lettre* was the Cambridge Scientific Instrument Company, co-founded in 1881 by Charles Darwin's son, Horace, partly to meet the demand for scientific instruments triggered by the creation of the new University science site. This and other accounts of early pioneers (such as Aero Research and Marshalls) are crisply told and neatly illustrated by Kirk and Cotton.

But the most intriguing aspect of the Phenomenon is that it very nearly did not happen. The planning regime after the Second World War, strictly enforced, envisaged Cambridge remaining a small town on the edge of the Fens with no development to accommodate industry. Cambridge Consultants and others needed to play cat-and-mouse with the planning authorities to be able to use suitable premises in town. The 1960s were reminiscent of the 1840s, when the recurrent conservatism of both town and gown delayed building a train station, and insisted on its being sited more than two kilometres from the centre (a frustration to visitors to this day) to discourage undergraduates from travelling to morally-doubtful London.

Meaningful progress took nearly all the 1960s to materialise. Sir Nevill Mott, Cavendish Professor of Experimental Physics, was named chairman of the committee to explore how the University could develop better relationships with industry. The Mott Report in 1969 came out in favour of expanding science-based industry. In particular:

Two types of firm were recognised, those that were set up to exploit ideas from Cambridge University, and those that moved to Cambridge in order to benefit from both the University and other technology firms in the area. ([1] p31)

The Mott Review led almost immediately to the creation of the Cambridge Science Park in 1970, the brainchild of Dr (later Sir) John Bradfield, Senior Bursar of Trinity College. To help new companies reach the stage where they could justify renting a large building with its own front door on the Science Park, Dr Christopher Johnson (Senior Bursar of St John's College) worked with other pioneers, such as Walter Herriot of Barclays Bank, to devise the St John's Innovation Centre, whose doors opened in 1987. Both the Science Park and the Innovation Centre were the first of their respective type in Europe.

5. No Plan but Critical Values

The second surprising lesson is just how spontaneously the cluster evolved. No single person or organisation was in charge, no unified plan decided where key sectors should locate or which services should be prioritised. Instead, geographical preferences evolved with the desire of firms to co-locate with others like themselves, often where facilities or specific equipment could be shared. Life sciences clustered to the south of the city around the Babraham research campus, which benefited from funding from the Biotechnology and Biological Sciences Research Council (a non-departmental public body); engineering, computing and physical sciences gravitated more to the Science Park and St John's Innovation Centre in the north, but demarcations always remained fluid and other parks emerged over time.

Though never anywhere as deep an investment pool as Sand Hill Road adjacent to the Stanford campus in California, Cambridge from the late 1990s sustained a handful of indigenous venture funds (including Amadeus Capital Partners, co-founded by Hermann Hauser, one of the instigators of Acorn Computers and later benefactor of the Enterprise Centre on the West Campus) and attracted investors from London and even the Valley for *ad hoc* deals. However, its peculiar strength owed much to the dynamic contribution of experienced private investors with extensive technology expertise:

As successes mounted, some of Cambridge's entrepreneurs began to support the companies that came after them. The Cambridge Angels, sometimes described as a dining club with an investment problem, at other times as an investment club with a dining problem, marry technical knowhow with business acumen. ([2] p183)

Citing one of Cambridge Angels' published criteria, Kirk and Cotton touch on a distinctive aspect of the prevailing mind-set in the cluster:

Whilst we consider the financial performance of our portfolio to be an important measure of our success as Angel investors, we also invest because we want to give good people with good ideas the chance to create successful new businesses. (ib.)

Put simply, many of the values that have built the Cambridge Phenomenon over the past two generations are radically different from the popular mythology of a self-centred, winner-takes-all capitalism dominated by entrepreneurs seeking to maximize personal financial return almost at any price. Instead, much entrepreneurial and investor behaviour has evidenced a desire to

‘pay forward’ to others favours received during the formative stages of a start-up, rather than ‘pay back’ the original mentors. A superordinate goal, a sense of being part of an entity larger than its individual parts, hovers over the cluster:

A particular feature [...] is what people refer to as the ‘Cambridge spirit’, something they have not observed elsewhere. The Cambridge spirit is described as an attitude where people willingly help others without expecting anything in return [...] Newcomers in particular say they find it easy to meet people and create connections. The sense is that help freely given contributes to the overall success of the cluster, which is ultimately good for everyone. ([1] p201)

One way in which newcomers might be welcomed is through joining some of the score or more of professional networks with which Cambridge is arguably over-endowed. A more specific example of ‘doing well by doing good’ can be seen in the evolution of Raspberry Pi, a credit-card sized, single board computer developed by academic entrepreneurs such as Eben Upton and Jack Lang to reignite the teaching of computer science in schools:

Raspberry Pi came out of a growing recognition that coding skills among applicants to the Computer Science course at Cambridge University were declining. It looked like this was due to the changes in how people, especially children, interacted with computers, and the switch of ITC education from coding to the use of programs like Word and Excel. ([2] p68).

The price of boards has dropped below \$35 and over ten million have been sold since inception. Raspberry Pi, a spiritual successor to the BBC Micro, has been split into a trading company and a foundation to promote education in programming.

6. Role of the University of Cambridge

The part played by the University is perhaps hardest to explain to those who do not work in the cluster. Contrary to the assumption of many visitors, the University is not a major source of spin-outs strictly defined: that is, companies started up by the technology transfer office (Cambridge Enterprise) to commercialise University intellectual property. On average, fewer than a score of such companies receive funding from the University each year, though their above-average quality is attested by their relative longevity and ability to secure external funding. Though only 11 spin-out companies received direct investment from University seed funds (£3.2m) in 2013-14, Cambridge Enterprise’s portfolio companies had raised follow-on financing of £1.29bn since 1995 [4].

The University’s instigatory role in the recent formation of Cambridge Innovation Capital (with £125m under management) to be a long-term investor (in its own words) ‘in intellectual property rich companies from the University of Cambridge and the wider research and business community around the Cambridge region’ reinforces the positive ambiguity over the relationship between the University and the rest of the cluster.

Of course, having a leading University (96 of whose affiliates have won Nobel Prizes) and other international research organisations within easy reach contributes to the success of the region. But trickier to explain is why, looking around the world, some highly-ranked universities fail in converting academic excellence into commercial and societal impact. Part of the answer must

be the ‘godparents’, in this instance specifically those of undoubted academic prominence in engineering, physics, computer science or biology, who have led from the front in establishing the view that research prowess and start-up activity are complementary, not antithetical.

I have – regrettably – come across some curmudgeonly exceptions among tenured faculty to this positive view but was heartened at a recent private meeting when one of the most academically successful and commercially prolific heads of a University department asserted that the only measure of success that matters for a Cambridge start-up is whether it will ‘make a dent in the world’. This approach is strengthened by the bias towards ‘deep science’ in Cambridge companies, whose products are more likely to be sold to other businesses (B2B) than directly to consumers (B2C), in contrast to the pattern among London-based digital or media start-ups.

‘Deep science’ influences another counterintuitive twist in Cambridge. Many policy makers seek ways of making research more ‘relevant’ or prioritising funding on those specialisms most likely to produce marketable products. Kirk and Cotton show that, contrariwise, it is often blue-skies or curiosity-driven research that in the longer run produces the most impact, socially and financially. Research on genomics in the early 1950s led to the creation of fast, low-cost gene-sequencing from Solexa, sold in 2006 for \$650m. Work on monoclonal antibodies in the 1970s led in 2003 to the launch of Humira, one of the biggest blockbuster drugs ever, bringing relief to millions of rheumatism sufferers – and a \$1.3bn price tag. Charles Babbage’s ‘difference engine’ in the nineteenth century and Sir Maurice Wilkes’s EDSAC (electronic delay storage automatic calculator) of 1946 were the ancestors of Acorn and ARM. And mathematician Mike Lynch’s PhD research into Bayesian inference was the foundation of Autonomy’s global unstructured search business ([1] pp10-11).

A relatively liberal approach adopted by the University to the exploitation by researchers of intellectual property is another factor, providing both incentives for and assistance with commercialising knowledge. Researchers are not obliged to use the tech-transfer services of Cambridge Enterprise but many academics will be aware of the potential advantages in doing so:

The emphasis for Cambridge Enterprise is to have an impact by benefiting society rather than necessarily making money, although its investments since 1995 have returned a multiple of 2.4. ([2] p187)

A widespread belief in Cambridge is that the collegiate system has assisted the cluster by bringing together socially those with very different areas of domain expertise – a physicist might dine with a geographer and sit on the investment committee with an economist and a theologian. At the same time, colleges are held to promote a relatively flat hierarchy, facilitating access between junior and senior members. Evidence to support either hypothesis is sparse, but the ideal of a flexible, inter-disciplinary sodality permeates much of the cluster beyond the University.

7. The Meta Level

Taking both publications together, Kirk and Cotton unfurl the complexities and apparent contradictions of the Cambridge cluster admirably, the ‘how’ of a concerted narrative and the ‘what’ of companies and people. Two tasks remain: first, to distil further the underlying ‘why’ – identifying the complex interrelated levers that made the Phenomenon possible, teasing out the internationally-replicable elements from the unique Cambridge circumstances; secondly, confronting some bleaker emerging trends – from planning policy to Britain’s threatened exit from the European Union – likely to make further development of the cluster more fractious.

Charles Cotton, himself a successful international entrepreneur as CEO of Virata, has said that he will not write any further volumes on the Cambridge Phenomenon, so the burden of extracting its wider lessons will fall on Kate Kirk.

A sketch for such a third volume might read as follows. First, the Cambridge story is a case study in the sense that that term is used in business schools for teaching purposes: students will be familiar with the rubric that case studies ‘are developed solely as the basis of class discussion’ and are not intended to show either good or bad management practice (and indeed Harvard Business School has produced a case study for the Cambridge cluster [5]). No complete, overarching conceptual framework suitable for other locations could be expected to emerge because the success of clusters depends heavily on individual context.

While *insight* may be derived from the Cambridge experience, specific *policies* will be harder to extract and apply. In my experience, visitors to Cambridge – especially those from government – often bring a rigid mind-set rooted in the ‘linear model’ of innovation, one based on technology push: invention ‘should’ readily lead to new products, which are swiftly diffused as customers adopt them [6]. But simply increasing research intensity (‘turning money into knowledge’) does not of itself produce innovations (‘knowledge into money’) that markets adopt. Considerable work and numerous (overlapping) micro-initiatives are needed to create entrepreneurial cohorts with appropriate tools to achieve this. Student entrepreneurship and its concomitant cultural change only started to be addressed in earnest in Cambridge around 2000, when business plan competitions, evening training events, venture capital clubs and formalised industry links were all invested in by the public sector and philanthropic foundations.

The benefits of investing in people take a while to show through, a lag which often leads to impatience among policy makers and suggests another general lesson. While intermediate *outputs* in academic clusters can usually be measured relatively easily – papers published, conferences attended, patents registered, memoranda of understanding signed – because they are costly, bureaucratic and time-consuming, in the longer run outputs can interfere with real *outcomes*: building successful, profitable businesses, selling useful products and developing experienced (serial) entrepreneurs able to run further start-ups and grow them faster. Clusters need to develop holistically, which undue focus on individual indicators can inhibit [7]. Otherwise a variation on Goodhart’s Law takes root: when a measure becomes a target, it ceases to be a good measure.

8. “Something in the Air”

Secondly, modern interest in cluster theory was rekindled some 20 years ago with the work of AnnaLee Saxenian [8] and Michael Porter [9], but their work was in several ways anticipated by the nineteenth century economist (and Fellow of St John’s College, Cambridge), Alfred Marshall (I am grateful to Christine Doel of SQW for bringing Marshall to my attention. See further [10]), who teased out the importance of tacit knowledge in distinguishing clustering from mere co-location. Skilled labour, supporting trades, firms specialising in different stages of production all lead to shared rules and conventions so that ‘the mysteries of the trade become no mysteries; but are as it were in the air’ [11]. Implicit values and complementary skills bind clusters together.

However, as Doel *et al* argue, citing earlier research on declining German industries [12], strong ties can be a curse as well as a blessing, especially if they prevent adaptation [10]:

*“Facing outwards” is – arguably – a pre-requisite for long term competitiveness. **The crucial lesson from history is that over time, inward-facing clusters tend to ossify, particularly if factor conditions also change.** As the economic geographer Gernot Grabher observed in the context of the demise of the Ruhr’s steel industry, the “ties that bind” – the lifeblood of genuine clusters – can insidiously also become “ties that blind” as the cluster fails to adapt, innovate and ultimately survive.*

These minatory words are doubly relevant for the future of the Cambridge Technopole. *Chacun a les défauts de ses vertus*, as Chopin’s companion, George Sand, put it. During its start-up and growth phase, Cambridge greatly benefitted from ‘letting a hundred flowers blossom’, with no one in overall control and no need for planning of individual initiatives. Now that it is an established cluster, home to over 4,000 firms employing some 60,000 and attracting major corporations such as Microsoft and AstraZeneca (which is currently relocating 1,800 employees to Cambridge), a far more joined-up approach to planning is needed – muddling through is no longer a virtue but a curse. Growth has made the *status quo* untenable; positive and planned change is necessary if Cambridge is to avoid the negative, unintended decline of the Victorian specialisms, such as cotton or jute processing, noted by Marshall.

However, the cluster has been turning inward. Housing in Cambridge is unaffordable for young academics and entrepreneurs alike; transport is choked and schools are full. Ironically, in marked contrast to the position in the 1960s, central government has offered significant infrastructure funding (a ‘City Deal’ worth more than £500m over 15 years, provided detailed plans are submitted), but now the pendulum of public opinion has swung away from the enlightened, outward-facing reforms of the Mott Report in 1969 and planners face relentless stonewalling from vested interests and residents’ associations rootedly opposed to change. Some physical expansion matters because even with new media facilitating remote working, tacit skills and shared values are appreciably facilitated through proximity.

Despite being an avatar of a more benign capitalism, Cambridge is beginning to suffer from the divide between those willingly participating in today’s profound technological and social change and those who feel left behind by it. Clashes in Cambridge do not yet approach the level of discord triggered by gentrification in San Francisco, but in the June 2016 referendum on UK

membership of the European Union, Cambridge voted 73.8% to remain on a 72.2% turnout; its near neighbour Peterborough (not a 'college town') voted 60.9% to leave on a 72.3% turnout (<http://www.bbc.co.uk/news/uk-politics-36616028>). The UK voted to leave by 51.8%. Seventeen percent of Cambridge's research income comes from the EU (<https://www.alumni.cam.ac.uk/news/statement-from-the-vice-chancellor-of-the-university-of-cambridge-on-the-result-of-the-eu>) and 16% of its students originate from other EU countries (<https://www.cam.ac.uk/global-cambridge/regional-focus/europe>). One leading local investor commented with dripping irony that two negative trends could cancel each other out [13]:

[...] the single action which would at a stroke make house prices fall, end the labour shortage and reverse the population growth we have seen in recent years would be success for the Brexit movement in taking us out of Europe. For Cambridge, in particular, the problems caused by our economic success are to be seen everywhere – whether it is the two dozen cranes active in the immediate surroundings, the daily queues on the A14 [the main east-west highway] or the huge difficulties all employers have in recruiting staff (both because of full employment and the difficulty in buying houses).

9. "A New Order of Things"

Teasing out the transferrable lessons of the Cambridge Phenomenon and interpreting contemporary dissatisfactions with change and growth will easily fill another volume in this series. On the evidence of the two published so far, a third book can be expected to provide clear and calm enlightenment.

Some years ago, I asked the then Vice Chancellor of the University of Cambridge – a known champion of the Phenomenon – how he persuaded the notably conservative academic community to accept innovation. He replied by referring to the immaculate lawn outside his historic office in the centre of the City; all summer, tourist guides would inform visitors that only a lawn mown and rolled assiduously over the centuries could become that smooth and verdant. 'But it's simply not true,' the Vice Chancellor said, 'we lay new turf each year. Managing change is about making people feel it's really just continuity.'

I suspect that the Vice Chancellor was, as academic administrators need to be, a keen student of Machiavelli, who came to prominence at the same time as the great Tudor expansion of the University of Cambridge [14] (For a guide more specifically aimed at navigating academic politics, see [15]):

And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the incredulity of men, who do not readily believe in new things until they have had a long experience of them.

References

- [1] Kirk K., Cotton C., *The Cambridge Phenomenon – 50 years of innovation and enterprise*, Third Millennium Publishing, London, 2012
- [2] Kirk K., Cotton C., *The Cambridge Phenomenon – Global Impact*, Third Millennium Publishing, London, 2016
- [3] Waters R., Valley visitors must bring back more than the T-shirt, *Financial Times*, 17 April 2013
- [4] Cambridge Enterprise Annual Review 2014, 4
- [5] Nicholas T., Chambers D., Preble M.G., Silicon Fen, Harvard Business School Case 815-082, June 2015
- [6] Godin B., The Linear Model of Innovation: The Historical Construction of an Analytical Framework, *Science, Technology & Human Values*, 2006, 31, 639–667
- [7] Stam E., Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique, *European Planning Studies*, 2015, 23(9), 1759-1769
- [8] Chandler A.D., Saxenian A., *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Harvard University Press, 1994
- [9] Porter M. E., Clusters and the New Economics of Competition, *Harvard Business Review*, 1998, 76(6), 77-90
- [10] Doel C., Delahunty L., Hindle R, *Accelerating Local Economic Growth – Clusters and Deals*, SQW Viewpoint Series, 2014
- [11] Marshall A. *Principles of Economics*, London: Macmillan, 1890, 271
- [12] Grabher G., The Weakness of Strong Ties. The Lock-in of Regional Development in the Ruhr Area, in *The Embedded Firm*, London: Routledge, 1993, 255-277
- [13] Johnson M., So would Brexit solve Cambridge’s problems?, *Cambridge Business Magazine*, April 2016
- [14] Machiavelli N., *Il Principe* (translated by Marriott W.K. 1908), chapter 6, 1515
- [15] Cornford F.M., *Microcosmographia Academica*, Cambridge, 1908
<https://www.cs.kent.ac.uk/people/staff/iau/cornford/cornford.html>

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St John's Innovation Centre is a 6000 m² technology business incubator (established by St John's College, University of Cambridge, in 1987) and home to some 85 high-growth firms. St John's is a Business Innovation Centre (BIC) accredited by the European Business Network and a partner in the Enterprise Europe Network.

