

Impact case study (REF3)

Institution: University of Edinburgh		
Unit of Assessment: 17 Business and Management Studies		
Title of case study: Transforming governance, reporting and the delivery of UK Major Programmes		
Period when the underpinning research was undertaken: 2014-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Paolo Quattrone	Professor of Accounting, Governance and Social Innovation	2013-2020
Period when the claimed impact occurred: 2015-2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact		
<p>Major infrastructure programmes are synonymous with delays and cost overruns. Quattrone developed the 'Maieutic Machine' framework, an instrument to improve the quality of governance and communication in complex organizations and projects. It helped shape the governance of Major Programmes in multiple organisations, including five public service providers and six companies. The maieutic machine's application has delivered the following impacts:</p> <ul style="list-style-type: none"> • <i>Home Office Collective Capital Bid</i>: helping to secure cGBP250m p/a of capital funding over the spending review period. • <i>Ministry of Defence Submarine Renewal Programme</i>: contributing to saving GBP3bn in 10-year costs and delivering efficiency savings across the programmes of circa GBP900m. • <i>Arcadis</i>: enabling the company to implement an 'action-oriented' governance system which identified and reduces uncertainty. 		
2. Underpinning research		
<p>Major government programmes, such as developing a fleet of submarines or building infrastructure for prisons, are large-scale, transformative projects with the potential to improve the quality of public infrastructure, safeguard society and enhance governmental efficiency. Major programmes are fraught with delays and budget over-runs, often caused by different cultures, clashing egos, and entrenched vested and conflicting interests. The challenge lies in managing the complexity of the programmes' governance, including the interconnected systems and teams involved, which often need to be planned and administered for years, if not decades [3.1]. Traditional governance for major programmes is often too linear and inflexible to account for the uncertainty which characterises the evolving nature of these projects. The governance systems are often overly bureaucratic, aimed at compliance and not fit for purpose. Their reliance on commercially popular project management models undermines their capacity to conceptualise risk and uncertainty adequately [3.2]. The tendency of major programmes to become 'siloed' compounds the problem.</p> <p>1) Quattrone dismantled the received wisdom on the appropriate governance arrangements for major programmes [3.1]. In their place, he outlined an approach labelled the 'Maieutic Machine', which drew from historical analysis of governance practices in the Jesuit Order (originally designed to deal with the uncertainty that characterised Jesuit missionaries spreading their messages to unfamiliar parts of the world) [3.3], and from examining the implementation of transformational projects [3.4; 3.5]. Through this approach, Quattrone shows decision-makers how to explore</p>		

the 'unknown-' unknowns', which are an inevitable aspect of complex programmes [3.1; 3.3; 3.4; 3.5], by challenging the conventional idea of Programme Management reporting systems as rational and complete documents of reporting [3.4];

- 2) designing a novel methodology for governance that favours the scrutiny of the unknown aspects of a major project; it profits from the inherent tensions among stakeholders. Active governance practice needs to seek out uncertainty [3.4];
- 3) interpreting governance and models as practices that do not merely represent reality but construct it as a 'machine' and generate effects other than its designers' intentions [3.4]. In particular, in Major Programme Management reporting techniques and data visualisations work as tools that generate debate, produce, and manage tensions around uncertainty [3.6], rather than feeding shared fallacies around certainty. Governance is 'active' and pursues dialogue and debate as its central task [3.5].

Quantitative data is centrally important to the coordination of major projects. The various models utilised data, which are conventionally accorded a high level of credibility, being viewed as 'true' or the 'facts'. The Maieutic Machine adopts a radically different approach in its treatment of quantitative data. In place of treating the data as a 'fact', it interrogates *how the quantitative data* gets produced, as *instruments to raise questions* [3.6]. It is premised on a paradox: if we assume we cannot know, we will know better [3.1]. The Maieutic Machine constructs uses numbers as a pretext for the interrogation: it is not an interrogation of the 'known', accounting uses what can be known (e.g. monetary flows) to interrogate that which cannot be reduced to numbers (e.g. political struggles). The focus is not on the visible but the invisible. By explicitly building tensions into the management team, it facilitates scrutiny of highly risky and uncertain situations for which the right course of action cannot be defined *a priori*, allowing for mediation and pragmatic pathways to emerge.

The Maieutic Machine offers a common language to all stakeholders and is composed of four main features: 1) visual space for interaction, 2) a method of ordering scrutiny, 3) a platform of mediation, and 4) a ritual of engagement. This allows managers to be liberated from their professional silos and meet other professional practitioners in a shared space where conflict and uncertainty can be dealt with and resolved more effectively, and to the benefit of the programme [3.5; 3.6].

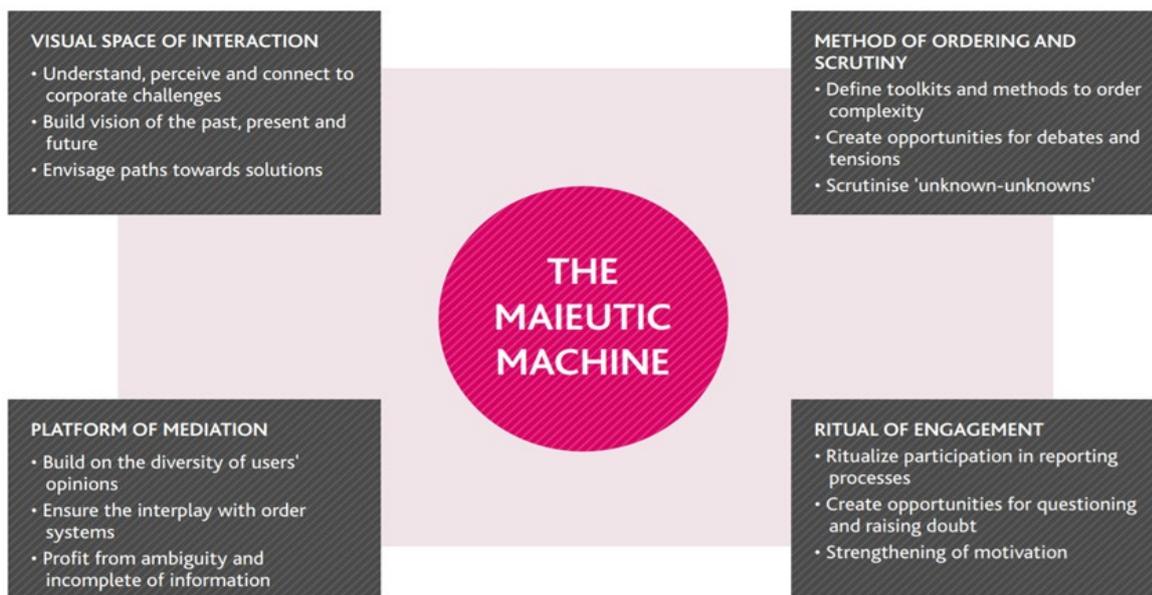


Fig 1 The Maieutic Machine

3. References to the research

- 3.1. Quattrone, P. (2017). 'Embracing ambiguity in management controls and decision-making processes: On how to design data visualizations to prompt judgment'. *Accounting and Business Research*, 47,5: 588-612. DOI: <https://doi.org/10.1080/00014788.2017.1320842>
- 3.2. Quattrone, P., Busco, C., Scapens, R. W., & Giovannoni, E. (2017). 'Dealing with the Unknown: Leading in Uncertain times by Rethinking the Design of Management Accounting and Reporting Systems'. *CIMA Academic Research Paper*, 12(14), 1–18. URL: <https://www.cimaglobal.com/Research--Insight/Dealing-with-the-unknown/>
- 3.3. Quattrone, P. (2015) 'Governing Social Orders, Unfolding Rationality, and Jesuit Accounting Practices: A Procedural Approach to Institutional Logics'. *Administrative Science Quarterly*, 60: 411-445. DOI: <https://doi.org/10.1177/0001839215592174>
- 3.4. Busco, C., and Quattrone, P. (2015). 'Exploring How the Balanced Scorecard Engages and Unfolds: Articulating the Visual Power of Accounting Inscriptions', *Contemporary Accounting Research*. 32, 3: 1236–1262. DOI: <https://onlinelibrary.wiley.com/doi/full/10.1111/1911-3846.12105>
- 3.5. Busco, C., and Quattrone, P. (2017). In search of the "Perfect One": How accounting as a maieutic machine sustains inventions through generative 'in-tensions'. *Management Accounting Research*, 39, 6: 1-16. <https://doi.org/10.1016/j.mar.2017.02.002> .
- 3.6. Quattrone, P. (2015). Value in the age of doubt: Accounting as a maieutic machine. In M. Kornberger, L. Jusesen, J. Mouritsen, & A. Koed Madsen (Eds.), *Making Things Valuable* (pp. 38-61). Oxford University Press. ISBN 978-0-19-871228-2 (Can be supplied by HEI on request)

4. Details of the impact

Quattrone disseminated his Maieutic Machine framework widely through key-note talks and lectures to practitioners [5.1; 5.2; 5.3], and played a significant role in shaping the Major Projects Leadership Academy [5.4]. He also co-authored policy documents for the Chartered Institute of Management Accountants (CIMA) [5.5], distributed to their membership base of 650,000 worldwide. His work received coverage in the *Financial Times* [5.6] and led to the Association of International Certified Public Accountants-CIMA (AICPA-CIMA) appointing Quattrone to their 'Thought Leadership and Business Ethics Committee' (one of twelve members). The UK's Financial Reporting Council followed suit and appointed him to their Advisory Group on the 'Future of Corporate Reporting' (one of twenty members). Quattrone engaged in extensive advisory work. The beneficiaries included Arcadis, Costain, Deloitte, Dyno, Gambling Commission, Home Office, Metropolitan Police, Ministry of Defence, National Capital Coalition, PwC, Royal Household, and the Royal Navy. Below, we provide three examples of how this engagement influenced the governance, design and implementation of major projects.

The Home Office's Collective Capital (HOCC) bid

The Home Office prepares a bid to the Treasury as part of the government's annual spending round. Part of this process is the HOCC, through which the Home Office requests funding for major capital investment projects. The Programme Director for the HOCC (2014-2016) experienced several major programmes that suffered from delays and spiralling costs and noticed the "tendency for there to be disputes over interpretations of legal contracts" [5.7]. Rather than 'business as usual', he recalled, "I was now in a position to apply fresh thinking" [5.7]; he used the Maieutic Machine to prepare for the annual spending round for HOCC with the Treasury. In place of simply making decisions based on budgets, the Programme Director had a dialogue with each of the programme managers, examining their specific contribution to the Home Office's strategic priorities. He then made decisions on what projects to support. Major Programmes at the Home Office drew heavily on Quattrone's research [5.7], allowing a focus on multiple rather than single projects, "Here Quattrone's insights from the Jesuits and the keys to the cash box was highly relevant ... His work focused our attention on looking at the 'coherent whole'" [5.7]

Quattrone's research played a central role in preparing the HOCC's spending round bid: "We reverse engineered the various proposed projects into Quattrone's Maieutic Machine. In our case, the Maieutic Machine took the form of the London Underground map. Our version of the tube-map was hung on our project room wall; it was our Maieutic Machine. Each tube-line represented a delivery roadmap for a project. The intersections on the map were the interdependencies and the project hand-offs. The graphic illustrated strikingly that if you pulled one piece out, the whole thing falls apart e.g. if you stop doing one project, something on another project falls over. Our tube map governed how we constructed the case to the Treasury" [5.7].

The application of Quattrone's research, "achieved an outstanding result in the budgeting round, securing cGBP250,000,000 p/a of capital funding over the spending review period ... and to align activity to the department's target operating mode" [5.7].

Part of the success stemmed from the HOCC's Maieutic Machine representation of its Major Programmes as interdependent, making it difficult for the Treasury to unpick the bid. The Treasury provided feedback that the HOCC's investment bid was the strongest and most difficult to challenge: "We came out of the spending review with virtually everything we had requested.... This was a stunning success and a direct application of Quattrone's work on governance" [5.7].

The Ministry of Defence's Submarine Renewal Programme

A major Strategic Defence Review put pressure on the Defence Budget. The Chief of the Strategic Systems Executive led the submarine renewal programme (SRP) between 2014 and 2016, drawing on Quattrone's work. As he explains, "On first reading, the link between leading major programmes for the Royal Navy and research into the Jesuits in the Seventeenth Century might seem a stretch. I found the reverse to be the case" [5.8].

Quattrone's work on governance informed the SRP programme, which examined interrelationships between maintaining and extending old submarines and building new ones at the right rate, while working out the levels of capital investment required at a given time. Quattrone's work encouraged the MoD to look right across the submarine enterprise at manning, logistics and critical capabilities: "Paolo's research encouraged me to focus on a programme view of all of those elements and how they interact" [5.8].

Quattrone's research helped construct an effective governance system, allowing for a compelling overview of the SRP: "Quattrone's work emphasises the rhythm of governance. I put in a system directly based on Paolo's work... Quattrone's work really helped in creating a sophisticated governance system that achieved the buy-in of different stakeholders and tied that in with the rhythm of the data" [5.8].

The effects of the new governance system were dramatic "It saved GBP3,000,000,000 in 10-year costs and delivered an efficiency across the programmes of circa GBP900,000,000. But more importantly, it encouraged the MOD teams to work together in a way they hadn't done before, and for Industry to do the same... Professor Quattrone's research insights into governance helped enormously in achieving this outcome" [5.8].

Arcadis: Aligning Stakeholders through Active Governance

Arcadis is a leading global Design & Consultancy firm for natural and built assets. It specialises in collective design, consultancy, engineering, project and management services. Arcadis employs 28,000 people and generates GBP3.2 billion in revenues per annum. The Chief Operating Officer (COO) in Europe, Middle East and UK, was familiar with Quattrone's work, which he viewed as: "innovative and [he] has made an enormous contribution to the Major Programme Management world... Quattrone turns conventional thinking on its head, through building rhetorical models which incorporates the views of major stakeholders in a maieutic process" [5.9].

Arcadis invited Quattrone to their headquarters in London, where he outlined the principles of the Maieutic Machine. They adopted it for use in their governance of projects and Quattrone was a regular lecturer at the Arcadis Academy to senior executives. Arcadis placed great value on the process of dialogue's capacity for reducing uncertainty in major projects: "Quattrone provides a means of narrowing the uncertainty gap. I characterise Quattrone's approach as action-oriented governance. What I take from this is designing governance processes that actively seek uncertainty... The impact of this approach is it confronts uncertainty and seeks to manage it" [5.9].

Embedding Quattrone's 'action-oriented' governance, the COO reported: "Our use of Professor Quattrone's approach has been highly successful in aligning the interests of stakeholders. It is singularly valuable in revealing areas of uncertainty. His work allows us to align a team working for a common purpose. This almost always secures a more successful outcome than traditional approaches" [5.9].

5. Sources to corroborate the impact

- 5.1. Quattrone delivered the 2016 Institute of Chartered Accountants of England and Wales' PD Leake lecture. <https://www.icaew.com/technical/business-and-management/finance-direction/embracing-ambiguity>.
- 5.2. TedX '*Ideas to Impact*' Series. Governing 'socie-ties' | Paolo Quattrone | TEDxOxbridge. July 2015. <https://www.youtube.com/watch?v=6D8Ddmvz9v8> viewed: 4,000 times, as 1/12/2020.
- 5.3. Email invitation and feedback on a keynote talk given to the Home Office. 300 attendees at the venue, 1,200 on-line. Name redacted.
- 5.4. Focus Group, London, December 11th, 2019. Convened by Kemp Communications.
- 5.5. Magazine article: Andrew Harding (February, 2017) 'A New CIMA report outlines how you can deal with "unknown unknowns"'. NQ Magazine pages 8-9.
- 5.6. Daniel Ban-Ami 'Jesuits have much to teach modern business about morality'. Financial Times, March 26, 2015. <https://www.ft.com/content/e90fe0f2-cd66-11e4-9144-00144feab7de>
- 5.7. Annual Spending Round at the Home Office: Testimonial from former Deputy Director, Portfolio and Project Delivery, Home Office
- 5.8. Ministry of Defence: Submarine Renewal Programme: Testimonial from the then Chief of the Strategic Systems Executive of the Royal Navy.
- 5.9. Arcadis: Testimonial from Chief Operating Officer Europe, Middle East and UK - Global Programme Director