

ENHANCING PRODUCTIVITY THROUGH NEUROSCIENCE-INFORMED LEADERSHIP

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OVERVIEW

This essay explores the critical link between neuroscience, management practices and productivity, challenging traditional paradigms and advocating for a neuroscience-informed approach to leadership. Drawing on recent government studies[1] [2] [3] and the latest findings in neuroscience[4], it proposes that understanding brain function is essential to improving productivity[5] [6] and achieving a happier, more engaged workforce[7], [8], (i.e. a ‘high-performance culture’[9]), through effective strategy deployment[10], obvious when we look beyond the findings often promoted through the psychological lens [11] and when we challenge the thinking constraints of a world educated to ask questions that fail to feature consideration of the neurological base behind behaviour, decisions, attitude and action.[12]

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INTRODUCTION

In a world incessantly driven towards higher efficiency and productivity[13], our pursuit often overlooks the intricate machinery behind every economic indicator and organisational success story: the human brain.[14] Despite rapid advancements in technology and an abundance of management theories, a fundamental paradox remains—why, in an age of unprecedented technological capability, does productivity in the current climate not only stagger but also fail to replicate the progress made in past centuries?

This Essay seeks to unravel the threads of this paradox by venturing beyond traditional economic measures and delving into the realm of neuroscience to fundamentally redefine productivity. It posits

that a deeper understanding of brain function, which fundamentally informs leaders world view, thus leading to sustained behaviour change, could be the missing link in the chain of management practices: a link that has the potential to not only enhance productivity but also to create workplaces that are harmonious and nurturing.

This essay notes the changing opinions over time, which reflect the evolution of knowledge in the market at large, coupled with concerns over the adherence to the scientific method, available data and practicality of knowledge vs. application, in what is increasingly being referred to as ON (Organisational Neuroscience) or a 'human centric' approach [15] [16] [17] [18] [19] [20] [21] [22]

Those exploring the citations will no doubt notice the 'hockey stick' nature of development in thinking surrounding the subject, seeing that what started as scant evidence and speculation, following the backing of neuroscience investigation some 10-20 years ago by various country leaders, now looks more like an established and recognised field of science, based, as it now is, on empirical evidence from studies, of an ever-improving quantity and quality, which make the clear connection between human brain function and organisational 'bottom line' performance.

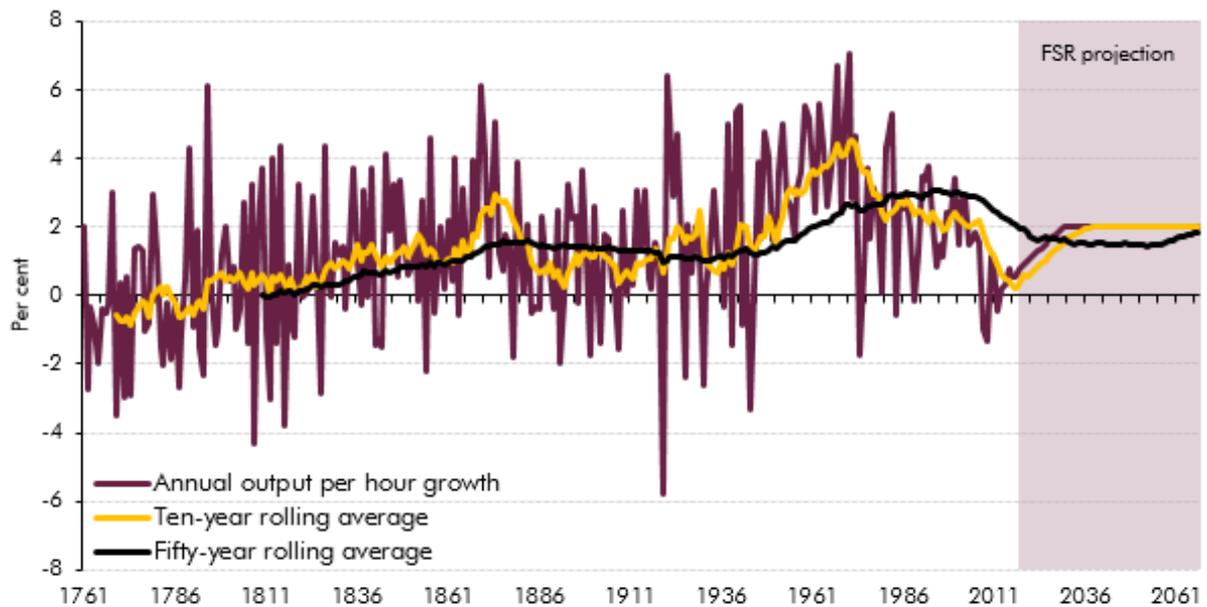
Historically, productivity has been gauged by the tangible output of goods and services relative to input[23], often neglecting the qualitative aspects that subtly but significantly influence this ratio. Similarly, management practices have long been confined within the boundaries of empirical observation, seldom considering the psychological and neurological underpinnings that drive human behaviour and decision-making.

Emerging from the cross-disciplinary fusion of management science and neuroscience is the concept of neuroscience-informed leadership, a paradigm where leaders not only direct and inspire but also choose to act in ways which consciously create the socio-technical conditions, that resonate with the very neural processes that govern their teams' thoughts, emotions, and actions (reactions / behaviours / attitudes / motivation / discretionary effort / sense of belonging / connection to purpose etc).

This paper advocates for a seismic shift in leadership ethos, where the focus expands from rigid KPIs and a mixed opinion over effective project management, change management and strategy deployment, to the neurochemical balances that dictate employee engagement, satisfaction, and creativity. This call to action is in response to the early findings following application of Duxinaroe's BTFA model to leaders, leadership teams, change advocates, global change teams, popular methods, and followers, where early results highlight the potential that embracing neuroscience-informed leadership could catalyse a new era of productivity, one where businesses thrive not merely through financial and operational acumen but through a profound understanding of the brain at work.

To further support this proposition, this essay considers current performance[24], excessive levels of disengagement, [25] [26] and productivity levels in comparison with past developments[27]. In the shadow of the industrial revolution, we stand amidst a digital renaissance, where technology promises efficiency and abundance. Yet, the anticipated surge in productivity remains elusive, posing a paradox that challenges economists and business leaders alike.

While the graph of technological innovation climbs steeply [28], (e.g. US Smart phone users went from 35% in 2011 to 97% in 2021 / US internet use has jumped from 52% in 2000 to 93% in 2021 and similar adoption rates are reflected throughout the developed world) the line charting productivity growth wavers and falters, as we see in the *NIESR – National Institute of Economic and Social Research* graph below.



Source: Bank of England, ONS

From <https://www.niesr.ac.uk/blog/why-uk-productivity-low-and-how-can-it-improve>

This paradox suggests that there's a disconnect between the tools we create and how we apply them within the workforce, whilst also suggesting correlation between technology, disengagement (a neurological / neurochemical state provoked by survival of and navigation around sources of stress in one's environment), productivity and profit.

Despite a digital landscape ripe with potential, the question looms large: why does the advent of sophisticated technology not translate into a commensurate rise in productivity?

The very essence of productivity, historically tethered to the industrial metrics of output per hour, now demands a re-evaluation in light of the digital era's nuances and affect over brain function.

THE HISTORICAL CONTEXT OF PRODUCTIVITY IN RELATION TO MANAGEMENT PRACTICES

The discourse on productivity is not new. From the first assembly lines to the recent explosion of data analytics, management practices have continuously evolved. [29], [30], [31] Yet, productivity has not always kept pace with innovation. As we reflect on two and a half centuries of productivity trends, we observe periods of significant growth tied to cultural and technological shifts. Notably, the mid-20th century saw a rise in productivity that coincided with changes in societal values, the beginnings of automation and a focus on situational leadership, a stark contrast to the slowing growth rates post-2008 financial crisis, despite exponential technological advancements.

Traditionally, productivity has been narrowly defined by economic metrics. However, to grasp its essence, we must turn to the bedrock of all corporate activity: the human brain. The burgeoning field of neuroscience offers profound insights into labour productivity, [32] compelling us to redefine value creation from the vantage point of brain function. [33]

A CRITICAL LOOK AT LABOUR PRODUCTIVITY AND ECONOMIC VALUE FROM A BRAIN FUNCTION PERSPECTIVE

Labour productivity, traditionally quantified as output per hour worked, [34] [35] fails to account for the cognitive and emotional labour that underpins every decision, innovation, and interaction in the workplace. Each employee's brain is a hub of potential, where neurochemical signals, electrical impulses, and synaptic connections determine their focus, creativity, and efficiency. It is in the nuances of these processes that true economic value is created, not merely in the sum-total of hours clocked. By valuing the quality of brain function, ensuring that each task is conducive to the well-being and engagement of the brain, we pave the way for a deeper, more sustainable kind of productivity.

THE ROLE OF NEUROGENESIS IN CHANGING MANAGEMENT AND LEADERSHIP PARADIGMS

Management and leadership paradigms stand on the cusp of a revolution spurred by our understanding of neurogenesis, the brain's ability to form new neural connections throughout life. The implications for leadership are vast. If leaders understand how to foster an environment that promotes neurogenesis, [36] [37] [38] they can create conditions where learning, adaptation, and innovation are not just encouraged but are biologically optimised. Leadership, thus, becomes an act of designing experiences that shape the brain, cultivating a workforce capable of meeting the complex demands of the 21st century with agility and resilience via an enhanced self-concept ... all subjective psychological constructs (terms) we can now explain more accurately with neuroscience. [39], [40]

RE-EVALUATING BEST PRACTICES IN LEADERSHIP AND MANAGEMENT

In a corporate landscape rich with doctrines of 'best practices,' the call for re-evaluation is not one of disregard but of enhancement. Neuroscience invites us to see these practices through a lens that magnifies the human aspect of organisational life, presenting an opportunity for CEO's, CPO's, CIO's, COO's and consultants everywhere, to better satisfy the corporate responsibilities already in place surrounding psychosocial harm, that fall squarely into the CSR / ESG and regulation / compliance space.

*“The [Health and Safety at Work etc. Act 1974](#) requires that organisations protect workers and others from harm, and **this specifically includes a person's mental condition**, as well as physical condition.”*

Today, with the rapid expansion of knowledge coming from the world of neuroscience, the term ‘**a person's mental condition**’ is increasingly understood as a subjective description of brain function, triggered by efficient survival within one's environment, with pre-determination factors linked to genetics and prior experience. E.g. Pleasure is often linked to the presence and availability of dopamine in particular brain regions, [41] happiness, the presence and action of serotonin [42] and critical thinking / capacity for innovative thought, can be linked to brain wave frequencies, memory recall and focus capabilities, (enhanced via neurotransmitters like GABA and acetylcholine) [43] and the glucose energy available at any given moment to power those areas of the brain [44] that either contribute to principles like engagement, in context of an individual's assessment of safety/fear vs. aversive response requirements in relation to their perception and prediction of risk, within their socio-technical paradigm / environment.

ANALYSIS OF CURRENT BEST PRACTICES IN LEADERSHIP AND MANAGEMENT THROUGH THE LENS OF NEUROSCIENCE

The 'best' in best practices has often been equated with what is most efficient or most replicable. Yet, efficiency can come at the cost of creativity, and replicability can stifle uniqueness. Through a neuroscientific lens, best practices are those that align with the innate workings of the brain—those that foster rich connections, encourage risk-taking within a safety net, and value the neural diversity each individual brings to the table. When leaders understand how to apply practices that align with neurobiological principles, such as fostering environments rich in trust and low in threat, they unlock the potential for greater creativity, innovation, and genuine engagement.

It is when the human brain enjoys such a state, that ideas are forthcoming, and action is taken to improve process. As promoted under the banner of the BTFA™ approach, from Duxinaroe, *“Creating the conditions in which brains perform at their best”*, is the essence of creating a high-performance, continuous improvement culture. Despite referring to Muda, Muri, Mura, and/or, people-process-systems as mantras within the world of organisational change and best practice, the connection to leader beliefs and subsequent pursuit of either profit or people focused outcome objectives, has systematically failed to recognise the connection between concepts like ‘Overburden’ [chronic stress], and a lack of innovation and action. Understanding neuroscience builds the bridge between cause and effect, with facts from science confirming the connection in leaders minds.

THE LIMITATIONS OF TRADITIONAL APPROACHES IN FOSTERING GENUINE ENGAGEMENT AND PRODUCTIVITY

Conventional wisdom in management has often fallen prey to the halo of the quantifiable and the allure of the controllable. But the engagement which ultimately underpins performance is not a switch to be flipped; it is a state to be cultivated, rooted deeply in neurochemical balances and psychological states.

Leadership practices that overlook these essential foundations might temporarily spike productivity, yet they risk eroding long-term employee commitment, overall well-being, and the very culture of the organisation. Unfortunately, this has become the hallmark of certain consultancies and the leadership teams that commission them. What is paraded as 'best practice' can inflict more enduring harm than the 'within the financial year' short-lived gains, can possibly compensate for. This approach, frequently driven by arbitrary or real time constraints, forced by political and market pressures, focuses on improving share price through often superficial acts, and often at the expense of authentic organisational health.

Neuroscience enlightens us! A sustained, high-performance culture stems from a brain response to environment imbued with reward, safety, and connection; conditions rarely met by the archaic carrot-and-stick approach, which is still all too common in politically charged corporate atmospheres.

Investors, who possess even a cursory knowledge of neuroscience, should be sounding the alarm and pulling the Andon cord, before pushing for a profound and rapid comprehension of the neural underpinnings that shape cause and effect. This understanding is critical, not just for the decision-making of leadership teams but also for investors themselves, as they strive to exemplify true leadership. It is only through such deep, science-informed commitment that a culture of high performance and substantial profitability can be cultivated within their portfolios and future endeavours.

NEUROSCIENCE, AND THE LANGUAGE SURROUNDING PSYCHOLOGY, AND SYSTEMIC CHANGE

At the heart of organisational transformation is the recognition that systemic / cultural change requires more than just surface-level adjustments to policies, procedures, and technology, introduced under the banner of change or project management best-practice. Such practices evolved before the latest findings from neuroscience were available. This realisation calls for a fundamental shift in understanding, of the psychological and neurological factors that drive human behaviour within organisations.

Systemic changes in management practices often aim to optimise operations, increase efficiency, and foster innovation, and such assumptions about productivity and performance improvement permeate society through the political arena, to academia and into industry at large. However, when these changes are informed by neuroscience and psychology, they go further by considering how such adjustments impact the mental and emotional states of employees. Neuroscience can guide leaders in structuring changes that align with how the brain best processes information, reacts to stress, and finds motivation. For instance, understanding the role of the amygdala in stress response provides leaders an opportunity to reverse engineer an approach that minimises workplace stressors and promotes a culture of psychological safety, affected by the leaders own attitude and actions, preceded by their imprinted beliefs in what 'good' looks like for the human brains in their employ. This is BTFA™ (Believe-Think-Feel-Act), in action.

A growing body of evidence suggests that organisations that apply neuroscience-informed management practices report higher levels of employee engagement, reduced turnover, and increased innovation, which leads to improved problem solving, collaboration, alignment and reduced resistance to change, making for better flexibility, overall performance and faster / greater ROI, in dynamic markets, even when effected by geo-political circumstance.

For example:

The integration of mindfulness practices into workplace training programs has garnered significant attention for its positive impact on well-being, emotional intelligence, and overall workplace competency. A randomised waitlist-controlled trial, conducted with employees of a Fortune 100 company, revealed that participants who underwent an 8-week online mindfulness-based training program reported increases in resilience, positive mood, reductions in stress and negative mood, as well as enhanced self-perceptions of emotional intelligence and workplace performance. This study demonstrates the effectiveness of such programs in improving key leadership competencies related to decision-making and creativity

<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2020.00255/full>

Further emphasising the application of mindfulness in leadership, the 'Search Inside Yourself' program, developed at Google and in collaboration with leading neuroscientists, combines mindfulness exercises to fortify areas of emotional intelligence, which has been shown to be a critical factor for success and leadership competency. The program outlines a scientifically backed curriculum focusing on leadership, mindfulness, emotional intelligence, and neuroscience, aiming to enhance various aspects of personal growth and leadership effectiveness. <https://mindleader.org/>

The enthusiasm for mindfulness in the corporate realm is palpable, however, the terminology often serves as an unintended barrier. "Mindful Leadership" might inadvertently trigger a negative emotional reaction in the fast-paced executive, who believes their role is to make swift decisions and deliver tangible results.

For minds steeped in a culture of immediacy, conditioned over years by deadlines, target driven behaviours and reward pegged to performance, the suggestion of mindfulness can easily and justifiably (as far as the individual is concerned) be dismissed as incompatible with their dynamic rhythm, seeing anything that isn't already imprinted into their belief system (neural wiring-firing construct) labelled, perhaps unfairly, as indulgent, non-essential, a waste of time or even 'soft and fluffy', and therefore OK to be dismissed as irrelevant.

Yet, framing this conversation in the concrete language of science can go some way to help break down these barriers.

E.g. Brains need energy to fire up certain areas, when scared and in survival mode, that energy is sent away from the areas of the brain that must engage to attain peak performance at work.

Such clarity and common sense, backed by science, equips the sceptical leader with a solid reason to pay attention, free from the fear of inefficiency. Moreover, a scientific dialogue has the power to illuminate the very neural mechanisms behind the leaders own instinctual scepticism, demystifying their reflexive dismissal of new concepts, leading to more open mindsets that sense and see opportunities. It is within this clear, evidence-based framework that leaders can recognise the cognitive biases at play within themselves and their teams, and more openly consider the profound benefits that neuroscience promises for decision-making acuity, strategic clarity, and overall leadership efficacy.

These findings support the notion that implementing neuroscience and psychology-backed approaches, framed in terms of the science and facts, such that the busy, logical executive can understand the bottom-line benefits, can substantially benefit management practices, promoting a culture of well-being and heightened productivity in the workplace.

NEUROSCIENCE AND ITS IMPLICATIONS FOR GOVERNMENT INITIATIVES

In efforts to stimulate economic growth and enhance productivity, government strategies play a pivotal role in shaping the enterprise ecosystem. Yet, historically, such strategies have largely disregarded the influence of cognitive neuroscience, focusing instead on economic measures and technology as primary levers for growth.

Programs like MAS, (Manufacturing Advisory Service) Growth Accelerator, and SiG (Sharing in Growth) have traditionally leaned on leadership training couched in historic opinion, clear-cut tech upgrades and fiscal incentives to spur economic growth. These efforts, backed by grants with the intent of enhancing GDP, are measured by metrics such as Gross Value-Added (GVA). However, despite broad acceptance, these strategies remain bound by orthodox educational models and the fear of providing proof of financial ROI against the use of taxpayers' money. This belief system and associated approach lacks the depth that insights from neuroscience, coupled with authentic leadership experience, could provide.

Furthermore, under duress of hitting targets imposed by those who have never done the job, these initiatives have been susceptible to manipulation. This is a consequence of the same neurologically driven and leadership-induced apprehensions (fear) that cause data to be skewed before ascending the hierarchical ladder in many organisations.

This behaviour is reflective of a productivity mindset established before the advent of neuroscientific enlightenment, resulting in a cyclical fear-driven environment and country culture that is at odds with contemporary understanding of workplace motivation and productivity. The predominant approaches, while commendable within their conventional frameworks, often overlook the brain's critical function in driving productivity.

The omission is stark: measures that induce stress can undermine cognitive efficiency, especially within the prefrontal cortex, essential for strategic thinking and innovation. Therefore, initiatives not specifically crafted to nurture brain-friendly conditions most often hamper the very growth they seek to facilitate, only realising better results in practice where an emotionally mature leader acts as buffer between attitudes derived from existing belief systems in those driving for change from the top-down and those delivering services on the front-line. Where we find such 'buffers' between the damage leaders often do, the brains of those involved are able to maintain a homeostatic chemical state, allowing for attitudes and actions that deliver results, despite the fear-based control mechanisms employed as standard they are shielded from.

To harmonise our economic ambitions with the intricacies of human neurobiology, policymakers must incorporate neuroscientific research into their strategic planning.

Recommendations to this effect include:

- The creation of leadership development curricula that pivot on the neuroscience behind decision-making, creative problem-solving, and emotional intelligence. Such programs should be cohesive and comprehensive, ensuring that fragmented service provision, a common shortfall in initiatives that rely on a spectrum of specialised providers, is replaced with a unified methodology centred on updating cognitive beliefs and practices in leadership teams, informed by neuroscience.
- Encouraging businesses to embrace programs deeply rooted in applied neuroscience, prioritising experiential learning from leaders who have effectively implemented change at scale across industries. The criterion should extend beyond academic conjecture to encompass neuroscience-

based strategies that promote cognitive function and employee wellness at a foundational and systematic level. E.g. via the approved approach to strategy deployment, led and implemented to reflect the leader / leadership teams genuine beliefs in how to create the [socio-technical] conditions in which brains can perform at their best.

- Revision of performance indicators to reflect holistic metrics, balancing economic output with indicators of cognitive health and organisational psychological / psychosocial safety, ensuring that the corporate environment is conducive to both human and fiscal vitality.

By infusing these neuroscientifically informed approaches, governments can effectively recalibrate their productivity strategies to foster environments where innovation, engagement, and well-being drive sustainable economic success.

DISCUSSION ON INCENTIVE SCHEMES AND OPERATIONS, AND HOW THEY RELATE TO HUMAN NEUROSCIENCE AND PSYCHOLOGICAL SAFETY

In the world of organisational management, incentives and operations continue to play a crucial role in shaping employee behaviour and company outcomes. However, common incentive schemes and operational procedures often fall short when examined through the insights provided by neuroscience and psychology, particularly in terms of promoting psychological safety and well-being. Social issues that provide stress triggers such as favouritism often undermine what are otherwise considered to be 'robust policies and procedures'. It is unfortunately commonplace to find pay rise and bonus schemes manipulated to reward managers and their reports who are approved of via unconscious bias. A sense of injustice can rapidly evolve in such circumstance significantly damaging company culture, leading to a lack of trust (a neurological state that detracts from performance at a biological / neurological level) in leadership.

Traditional incentive schemes are typically predicated on reward and punishment, assumptions that align with an outdated understanding of human motivation. Neuroscience suggests that such binary systems can lead to stress, reduce creativity, and prompt risk-averse behaviour. They often fail to consider intrinsic motivators and the complex neural mechanisms that govern motivation, satisfaction, and performance, such as sensory stimulus and related release of neurotransmitters such as Dopamine, Oxytocin, Serotonin and Endorphin (DOSE)[32]. Furthermore, operations that do not factor in the psychological safety of employees can inadvertently foster environments rife with stress and fear, counteracting the brain's capacity for innovation, strategic thinking, tactical thinking, collaboration and problem solving.

To create incentive schemes and operations that align with our neurobiological wiring, organisations could:

1. Shift from traditional reward systems to those that emphasize intrinsic rewards, such as autonomy, mastery, and purpose, which Daniel H. Pink highlights in his book "Drive." [45]
2. Introduce training programs like BTFA™ that help employees regulate stress, improve cognitive flexibility and explain the mechanics of human relations, by introducing a working knowledge of the brain mechanics behind such concepts.

3. Design operational processes that value collaboration over competition, encouraging neural patterns associated with trust and social bonding, as suggested by research on oxytocin's role in cooperative behaviours.

By integrating these neuroscience-backed strategies, companies can develop more humane and effective management practices that not only enhance productivity but also nurture the mental health and well-being of their employees, subsequently attaining the requirements of the Health and Safety at work act 1974, and remaining compliant in more positive ways than existing knowledge, process and policy supports.

PRESENTATION OF SUCCESSFUL APPLICATIONS OF NEUROSCIENCE IN MANAGEMENT PRACTICES

The emerging field of the neuroscience of management and leadership often sees contributions from diverse professionals, some of whom may not possess traditional engineering backgrounds or hands-on experience in global operational change programs or indeed, as Directors or country President of organisations like Toyota (which is the case at Duxinaroe). While the insights from neuroscience can enrich leadership across the board, there remains a nuanced complexity to organisational change that may elude those without the tacit knowledge gained from direct, ground-level experience in manufacturing environments, with Lean principles and with P&L responsibility in the board room of an organisation whose asset overhead is almost as large as the wage bill, and oftentimes more complex, when justifying capex, than navigating the often stormy seas of HR.

Leaders who have navigated the trenches of change programs, who have led teams through the thick of operational upheavals, and led all departments across entire organisations carry in their neural networks a repository of hard-earned wisdom. Their intuitive grasp of the philosophy underpinning systems like the Toyota Production System (TPS), built upon the dual pillars of respect for people, and continuous improvement, gives them a distinctive edge. This practical, empathetic understanding of cross-departmental dynamics and hierarchical challenges is something that cannot be easily replicated by theory or science alone.

Therefore, while the application of neuroscience to leadership is undoubtedly beneficial, it reaches its full potential when combined with the visceral learning that only comes from lived experience in the industrial sphere. This combination ensures that leadership development is grounded in a balance of scientific understanding and seasoned industry intuition, offering a comprehensive approach to nurturing high-performance cultures within organisations.

That said, examples from others who provide neuroscience education report significant benefit. E.g. the NeuroLeadership Institute offer a course called "The Neuroscience of Effective Management" This is designed to improve leadership qualities based on neuroscience research. Their approach involves creating conditions that foster psychological safety and cognitive diversity, leading to claims of increased innovative project launches and workforce engagement. [46]

Similarly, Change Management Review provides practical guidance on leveraging neuroscience to enhance change management practices. They say, by understanding how our brain works, change practitioners can improve their influence and the success rate of implementing changes. [47]

And ... Jan Hills from Orion Partners LLP discusses in "Human Resource Management International Digest" how applying findings from neuroscience can improve the execution of talent strategy, leading to better business results. [48]

These sources suggest that when management practices incorporate insights from neuroscience, there can be a positive impact on engagement, productivity, and innovation within organisations. Within our own approach, we see the benefits being much wider and far reaching, not only up to issues such as effective policy / strategy deployment (Hoshin Kanri), but also in respect to personal development and improved relationships outside of the workplace.

All findings to date, suggest the adoption of neuroscience-based management practices could benefit businesses looking to enhance their talent strategies and overall performance.

EXPANDING ON DUXINAROE LTD'S INNOVATIVE APPROACH, BTFA™, BLENDING NEUROSCIENCE WITH LEADERSHIP EXPERIENCE.

Duxinaroe Ltd. stands out in this emerging field with its distinctive approach that synthesises over three decades of leadership experience with cutting-edge neuroscience.

The partners, David Bovis and Levent Turk have pioneered methods that shift leadership paradigms by focusing on the neuroplasticity of the brain, which is the ability of the brain to rewire itself in response to experience.

By educating leaders on how their actions and the workplace environment they create can and will, inevitably alter their employees' brains physically, Duxinaroe Ltd. has helped organisations to not just incrementally improve, but to transform their productivity and employee well-being in profound ways.

The culmination of their work can be seen in their comprehensive training programs that guide leaders to apply these insights practically, fostering a work culture that optimises brain health and, by extension, organisational performance. Their Flagship experience, BTFA™ (Also known as Believe-Think-Feel—Act or 'The Bovis Cycle') is followed by 4 other modules culminating in effective strategy deployment. SURVIVE, ADAPT, ALIGN, DEPLOY.

With foundations in TPS learned directly from Toyota in Japan and from 16 years as senior leader and country president in Levent's case, and leading Lean/OpEx/Agile/Six Sigma, IE, Change management, and projects as taught and practiced globally, as General manager, Director and Consultant, in a wide variety of sectors, in David's case, BTFA™ provides the base for 'whole organisation' (Culture) change, providing knowledge and leadership ability, that has a positive effect at any scale, be it divisional / group, business unit, department, team, or individual.

Real-world applications of neuroscience in leadership, management and change practices, can be seen in the transformative changes implemented by global corporations using BTFA™. For example, a significant shift in performance followed the global OpEx change program, informed and enhanced by BTFA™, as led by Philip Holt at GKN Aerospace. In this case JP Morgan Casanova reported a £410M ROI in a 2023 'Times' Article that was a result of "market forces and *operational improvements*."

Such case studies underline the potential of neuroscience-informed practices in achieving not just incremental but transformative improvements in leadership effectiveness and organisational productivity.

For those interested in learning more about this and other developing case studies and exploring the principles behind such transformative changes, Duxinaroe Limited can be contacted via their website www.duxinaroe.com

CONCLUSION AND CALL TO ACTION

Drawing together the threads of this discussion, we arrive at a pivotal juncture where the potential of neuroscience to revolutionise management and leadership practices is both evident and urgent.

As we navigate the complexities of modern management and productivity, it has become increasingly clear that traditional models, while robust in their time, are insufficient for the challenges of today's workforce. The evidence and arguments presented in this Essay converge on a singular point: neuroscience holds the key to unlocking the true potential of our leaders and the teams they guide.

Summary of the Main Arguments and Evidence.

The insights from neuroscience do not just add a layer to our understanding of productivity; they compel a fundamental rethinking of it. We have uncovered that labour productivity, economic value, and best practices are inextricably linked to the cognitive and emotional well-being of individuals. Neuroscience has shown us that a workplace attuned to the neurological needs of its employees fosters not just higher productivity but also a more creative, engaged, and resilient human capital.

A Compelling Call to Action for Leaders and Policymakers to Engage with Neuroscience-Informed Leadership Training.

We stand at the cusp of a new era in management—an era that requires our leaders to be not just strategists and visionaries but also architects of brain-friendly environments. Policymakers and corporate leaders must now embrace the mantle of change by integrating neuroscientific principles into leadership development programs, decision-making frameworks, and policy formation. This transition is not merely advisable; it is imperative for those who seek to thrive in an ever-evolving economic landscape.

Final Thoughts on the Future of Management and Productivity in the Light of Neuroscience.

The future of management beckons a breed of leadership that is informed, compassionate, and brain-aware. This Essay advocates for a future where productivity is a reflection of an environment that respects the neurobiological mechanisms that drive us all. It is a future where management practices are not just about the bottom line but also about the neural pathways that define our human experience at work and in life in general.

As we look to this horizon, let us not shy away from the call to action. Let us engage with neuroscience-informed leadership training, seek out evidence-based practices, and boldly invest in the neural health of our organisations. It is time for leaders and policymakers to step forward and champion this cause, for the benefit of today's workforce and the generations that will follow.

In closing, may this Essay serve not only as a call to action but also as an invitation to journey into the rich and promising landscape where neuroscience meets leadership, and where the future of management awaits those brave enough to lead the charge.

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2. **Waldman, D. A., Balthazard, P. A., & Peterson, S. J. (2017).** Leadership and neuroscience: Can we revolutionize the way that inspirational leaders are identified and developed?
3. **Massaro, S., Dumay, J., & Guthrie, J. (2020).** On the shoulders of giants: undertaking a structured literature review in accounting.

These works contribute to a more nuanced understanding of how neuroscience principles can be applied to leadership and management practices, offering insights into the biological underpinnings of entrepreneurial behaviour and leadership styles.

4. **Chattopadhyay, R. (2020).** "Journey of neuroscience: marketing management to organizational behaviour", *Management Research Review*, Vol. 43 No. 9, pp. 1063-1079. This paper offers an overview of the advancement of neuroscience research in marketing management and organizational behaviour, discussing how neuroscience tools are powerful in understanding consumer and organizational behaviour.

5. **Paul J. Zak's work on trust.** His research links trust with the production of oxytocin in the brain and improved performance. He outlines managerial behaviours that build a culture of trust, thereby enhancing productivity, engagement, and collaboration among employees.

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