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THE POSSIBILITY OF POSSIBILITIES: SKILLS TO GROW A CAREER IN COMPUTING AND BUSINESS

Introduction

It has been one of the author's pleasures to work in business applications of IT, business systems analysis and design and to teach students in the UK, USA and from The Czech Republic. It is to this last group we address these remarks and hope you find them useful in plotting your future career moves.

First a framework for the journey; one suggested by Gerber [12] uses a hierarchy of behaviours and skill sets associated with the roles of technician, manager, leader and entrepreneur. To this we add the role of innovator which can apply across the range of technician, manager, leader and entrepreneur roles. Using the roles of technician, manager, leader and entrepreneur is not to imply that there are discrete skills and behaviours associated with each role rather that there is a continuum of behaviours. For example a technician may develop project management skills and so may a manager or entrepreneur. The other framework developed later will be that of the epic journey of the hero as we see it in books, films and folk tales. We also consider a growing view that appears to balance the strong thread of individualism that exists within some of these role typologies. We recognise that any individual leader's and entrepreneur's activity is surrounded by regular dialogue with their 'world' and that they as individuals are both being shaped and shaping their experiences and outcomes constantly. This view tends to acknowledge the dynamic and the complex in our world. The leader and entrepreneur view themselves then as part of a 'community of players' who contribute to a final outcome. In particular we acknowledge a considerable groundswell movement in the UK to revise leadership ideas in a much broader way. This is largely driven from the UK's acceleration towards new trading landscapes that have little association with its heavy industry dominated past. This changing context appears dissatisfied with the depth and relevancy of many dominant ideas surrounding leadership and entrepreneurial activity.

The Technician

A technician according to the Oxford English Dictionary [30] is; "an expert in the practical application of a science, a person skilled in the technique of an art or craft." From our perspective we would associate behaviours such as being skilled in programming, graphics design or database design. In addition technical graduates are expected to demonstrate a range of cognitive and intellectual skills and be competent in using techniques associated with their chosen technical domain.

Cognitive skills consistent with becoming a skilled technician will include critical thinking, problem formulation through analysis and synthesis. The capability to identify assumptions, evaluate statements in terms of evidence, to detect false logic or reasoning, to identify implicit values, to define terms adequately and to generalise appropriately. The technician is also expected to have developed quantitative skills including data analysis, interpretation and extrapolation and to be able to present numerical data in meaningful ways.

The technician operates in the areas where we can "engineer solutions" using known techniques, where we use "hard systems thinking" and solve "hard systems problems". Checkland [7] refers to hard systems

thinking as dealing with structured problems, where there is agreement about objectives. Whereas soft systems thinking deals with unstructured or messy problems, where the relationship between system components is unclear and the objectives a system is trying to achieve are subject to interpretation or potentially in conflict.

The technician is also expected to develop some professional skills which can be characterised by self-management in terms of time, motivation, showing initiative and enterprise. The technician is also expected to demonstrate effective performance within a team environment, including leadership, team building, influencing and basic project management skills.

What of innovation?

Perhaps here is a good place to try to get to grips the notion of what in our context is meant by “Innovation”. Often the word is used interchangeably with other words such as “Creativity” or “Enterprise”. Fleming [9] suggests that innovation is synonymous with invention. Invention he says is the putting together a new combination of components, ideas or processes. Every invention can be thought of as an assembling of these parts. He further suggests that in the process of being innovative we try out lots of useless combinations and only a few new combinations are of use or have any value and even less can be thought of as break-throughs.

Being innovative is not exclusive to any of the roles of technician, manager, leader or entrepreneur but can be associated with all of them. A manager may be innovative in the way a service is delivered to customers or an entrepreneur may see a way of joining two technologies together to bring a new product to the market.

It has long been understood that innovations happen when ideas from different knowledge domains rub against each other. Kirby [19] describes early problem solving and innovations as teams from varied backgrounds were brought together in the late 1930s and early 1940s into The Royal Air Force Coastal Command’s Operational Research Section (ORS). Here they developed the British air-defence planning against the Luftwaffe and the campaign against German U-boats.

Technicians typically make innovations to components or the way we configure them. Sometimes, it is just the processes of putting different perspectives together that generate innovations. Skrbek and Wraith (2004) discuss the notion of “Clustering” talent and ideas in either a geographical community or a virtual one and how this is being used by European, Regional and local governments to stimulate innovation and business growth. This is the Lennon and McCartney model where the clustering of talent generates Innovation!

Moving from Technician to Manager

In the early part of your career, particularly if in a technical role you may survive as a “back room boy” solving technical problems but shielded from customers facing roles. However, having good interpersonal skills; effective listening, negotiating and persuasion along with effective communication, oral and in writing, using a range of media and communication technologies in the preparation and presentation of reports and ideas will give you access to a broader career path.

Part of your degree course will have opened your mind to issues away from the mainly technical to

those concerned with managing people (man), money, machines, materials and the rules that bind them together as Jenkins [18] suggests. The ability to model these interactions using systems thinking and systems modelling techniques can lead to more effective problem solving and decision making.

In the UK the Quality Assurance Agency (QAA) for Higher Education has generated a set of benchmark statements. (Subject benchmark statements General Business and Management Draft for consultation [34]) They describe the general expectations about standards for the award of qualifications at undergraduate level in terms of the attributes and capabilities that graduates in a business / management should have demonstrated. They include aspects such as : the ability to create, evaluate and assess a range of options together with the capacity to apply ideas and knowledge to a range of situations; the ability to conduct research into business and management issues, either individually or as part of a team. This requires familiarity with a range of business data, sources of information and appropriate methodologies.

The QAA also suggest the graduate should engage in self reflection and criticality, including self awareness, openness and sensitivity to diversity in terms of people, cultures, business and management issues. We will see later that these along with the skills of learning to learn and developing an appetite for learning; reflective, adaptive and collaborative learning are some of the attributes further refined in leadership development.

It is recognised that programmes covered by these standards need to address issues at the European and international business levels, so appropriate business and cultural understanding and, where appropriate, foreign language capability will be developed and demonstrated by some graduates.

So to be an effective manager we may have previously developed technical skills as an effective team member and junior manager. We will probably have been innovative in developing new products or new ways of doing things. To this author however, learning to be a manager is equivalent to learning how to be a technician. We can study a degree in Computing and we can study at a similar level in Management. How do we improve our skills in both? We practice them first in simulations of the real world then in the real world; the world of work.

What is Leadership?

The Northern Leadership Academy (NLA) [35] has an interesting set of definitions of what others have described as “Leadership” a few examples of which are listed below:

"A leader is a dealer in hope." Napoleon Bonaparte

"Management is efficiency in climbing the ladder of success; leadership determines whether the ladder is leaning against the right wall." Stephen R. Covey

"The job of the leader is to speak to the possibility." Benjamin Zander, British conductor

“Leadership: the art of getting someone else to do something you want done because he wants to do it.” Dwight D Eisenhower (1890 - 1969)

“Leadership is all hype. We’ve had three great leaders in this century - Hitler, Stalin and Mao.” Peter Drucker, quoted in Fortune, 21/02/94

These attempts to capture the essence of leadership in any simple form remain difficult. As Grint [16] observes: “Despite over half a century of research into leadership, we appear to be no nearer a consensus as to its basic meaning, let alone whether it can be taught or its moral effects measured and predicted” (p14). However, there is a re-emergence of the critical value of leadership and this stems from a number of areas. None more urgent than the perceived productivity gaps between nations and regions within nations. In the UK for example there is a gap between the northern and southern regional economies. The source of these disparities has been laid firmly at the door of leadership and management practice. “The UK has some

serious problems with management and leadership.” Leitch, [21] (p89)

The well recognised virtues embedded within the management discipline, of creating stability, continuity, structure, order and strategic planning, have been celebrated as a source of value creation into the post-industrial era. However, it is acknowledged that the ability to rely on management capability alone to bring a turbulent world to heel through traditional methods of strategic management is under increasing challenge in the new economies. There is a growing and urgent requirement in organisations to create flexibility, change processes, adapt strategies, be creative, innovate and employ adaptable people. Together this is placing a renewed emphasis on the leader and leadership practice. [17]

Having positioned leadership as a distinct ‘idea set’ with its own virtues, there remains the paradox of leadership and management being viewed as the two sides of the same coin, that is, these constructs are synonymous. However, they remain quite distinct in their contribution to value creation. This might be delineated further by offering that management is ‘d  j   vu (seen this before), whereas leadership is vu j  d   (never seen this before) (Grint, [16]). Given the nature of the new economies organisations are grappling with vu j  d   at an ever increasing rate and looking with greater urgency for answers.

Before we consider some of the newer ideas of leadership, including those propounded by the Northern Leadership Academy, that leadership is a complex social processes that stretch beyond the traditional traits of the individual leader it is worth considering some of its antecedents.

Earlier researchers into leadership reviewed by Stogdill [29] had suggested that to understand leaders one needed to establish a set of traits that a leader should possess. More recently Chemers [8] has suggested this has changed to an emphasis on understanding leaders’ behaviours.

The academic views on how we now discuss leadership were moved when Burns [5] extended the vocabulary away from the heroic, visionary, autocratic and exercisers of power to consider what it is to be an “effective” leader. Burns introduced the notion of transformational leadership and transactional leadership. The latter he characterised as focussing on an exchange relationship between follower and leader where followers are given what they want for achieving what a leader desires.

Transformational leadership, however, characterises the leader as taking a visionary position and inspiring people to follow. In recent times Yukl [33] describes transformational leadership as “the process of influencing major changes in the attitudes and assumptions of organisational members and building commitment to the organisation’s mission or objectives.” (p.253). Perhaps if we can capture the essence of transformational leadership it might be as offered by Bass [3], who suggests that the transformational leader moves a follower into behaviours beyond their own self interest.

Busari [6] suggest that Leadership is more than acquiring domain knowledge as required by technicians and managers but is about different ways of doing and handling business in organisations. He further suggests that leadership research has explored the attitudes and willingness of “subordinates” in carrying out actions requested and that contingency theories as developed by Northouse [24] indicated a leader’s effectiveness depended on “the situation” and “the followers” particularly on how well the leader’s style fits the context of the situation.

Patterson [25] reviews the differences between transactional and transformational leadership styles as being similar to common gender stereotypes with the male stereotypical behaviours of being autocratic, assertive, logical, decisive and task oriented being aligned to transactional style of leadership and female stereotypical behaviours of nurturing and being relationship oriented associated with a transformational leadership style.

Avolio and Bass [1] had previously developed a frame work; the basic components of which suggest that effective leaders are ascribed as:

- Being role models, exhibit motivational skills, are charismatic and arouse strong emotions in followers and are prepared to take risks
- Being able to articulate an appealing vision and motivators who encourage and gain commitment to that shared vision.
- Leading problem solving within a team and encouraging challenging ways of thinking
- Demonstrating support to individuals and aware of their concerns and who recognise and respect differences

Busari [6] develops the argument that effective leadership behaviours can be linked to cognitive style; “the way an individual observes their organisational and environmental setting as information sources and how they perceive, process and manage information to handle their behaviour and decision making.”(p9) The notion of cognitive style can further be linked to left brain / right brain thinking models where left brain thinking is associated with an analytical style of thinking and right brain thinking associated with a more intuitive approach. To expand this concept left brain thinking is concerned with the logical, sequential, rational and analytic where as right brain thinking is associated with intuitive, holistic and more subjective styles of thinking.

The final component of effective leadership considered in this paper is that which deals with interpersonal relationships. A concept known as Emotional Intelligence (EI) is widely discussed in effective leadership research. Mayer and Salovey [22] define EI as “the ability to perceive accurately, appraise and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth” (p. 10)

George [13] suggests that emotionally intelligent leaders instil a sense of enthusiasm, trust and collaboration through interpersonal relationships. The emotionally intelligent leader also needs to be authentic as perceived by followers as Gardner et al [10] put it: “By being true to one’s core beliefs and values and exhibiting authentic behaviour the leader positively fosters the development of associates until they become leaders themselves.” (p345)”

More latterly writers have been challenged to move away from embedding leadership solely within the frame of the individual. And as such are seeking to present ‘leadership’ and ‘leadership learning’ as encompassing multiple and diverse perspectives.

Thorpe et al [32] suggest that some of the received dominant leadership constructs should be re-framed due to rapidly changing business landscapes; not least the demise of the manufacturing era when management practice and its ‘dominant theology’ were prized e.g. Henri Fayol’s emphasis on management / leadership control remains a principle still celebrated as a goal of ‘good leadership / management’. In a post industrial landscape the desire to bring our world to heel and achieve control of processes is increasingly perceived as impossible. If we accept the post industrial world is subject to waves of rapid change we might then accept that the principles of management control are inappropriate to determine where value is created..

Furthermore, the emergence of complex organisational structures, particularly within very large organisations e.g. the UK’s National Health Service, the world’s fourth largest employer, are presenting new management challenges where transformational leadership and managed and measured change are peculiarly difficult given issues of, for example, rapid advances in technology, customer expectations and multi-disciplinary teams, amongst many others. Fundamentally it is very ‘rare’ for the leader to know the true source of value as an organisation grows, let alone steer the ship towards it. There is an onus upon the leader (parent) to articulate the source of value to those ‘below’. (Goold & Campbell, [14]; Goold and Campbell, [15]).

The Northern Leadership Academy holds the view that new notions of leadership are required to

respond to macro environmental and other organisational changes e.g. globalisation, supply chain transformation, complexity, discontinuity, rapid change, follower / member aspirations. Some of these newer phenomena challenge directly dominant leadership models that still persist strongly e.g. an emergent perspective is that effective leadership practice benefits from being 'shared' across the group (e.g. 'distributed leadership' model) rather than embedded within 'the few' as celebrated in classical paradigms. Here social capital is greatly valued, particularly where organisations work across previously demarked boundaries (i.e. interdependencies across teams, organisations, industries, regions etc.). We should also note that conceptions of what constitutes an organisation are shifting, Skrbek and Wraith[28], with the blurring of organisational 'boundaries' requiring different leadership thinking e.g. consumers are no longer 'imprisoned' at the end of the value chain but are prone to appear 'where they traditionally wouldn't gain access', further disrupting leadership activity (Prahalad and Ramaswamy, [26]). These issues challenge the linear view of organisations transforming inputs to outputs supported by leaders employed at levels in the organisational hierarchy. Our notions of value creation are changing and so should the leaders' perceptions change.

The Entrepreneur

Are there significant differences between an entrepreneur and a leader? Thorpe et al [32] suggest "Entrepreneurship draws from management and leadership orientations and extends behaviours towards innovation, networking, visionary commitment and risk management." (p51) fig 1.

In many ways an entrepreneur may need to demonstrate the behaviours we associate with a successful technician, manager and leader but is there something extra you need to be a successful entrepreneur? Thompson [31] defines entrepreneurs as “People who create and innovate to build something of perceived value around opportunities they spot” (p47) He also contends that one can find examples of entrepreneurial behaviour in all sectors of the economy; they are the people driving the change agenda.

Thompson [31] in discussing entrepreneurial potential returned to the concept of traits and instinctive ways of behaving. He uses the acronym FACETS to indicate the entrepreneurs need Focus, vision to identify business Advantage, be Creative and have an Ego that makes them dedicated and show courage in adversity, prepared to work through a Team and have Social skills that are appealing to others. To affirm this he goes on to say “entrepreneurs provide vision / direction (which relies on creativity and advantage); they have passion (driven by ego and focus) and they make things happen (advantage and focus)

Gerber [36] in his pamphlet „The CEO Report: Why Most Businesses Don’t Work” , talks about things that drive a person to start up their own business the story goes: “What am I doing this for? Why am I working for this guy? Why, I know as much about the business as he does. If it weren’t for me, he wouldn’t have much of a business. Anyone can run a business, if he’s half as smart as me.” (p2). Where most start up businesses fail according to Gerber is; believing the assumption that if you understand the technical work of a business, you understand how to run a business that does that technical work. True Entrepreneurs work on their business not in it. To Gerber; „everyone who goes into business is actually three-people-in-one: The Entrepreneur, The Manager, and The Technician.” (p3).

So it may appear the entrepreneur’s challenge is a commitment to personal growth. Acquiring the hierarchy of skills and capabilities an Entrepreneur needs to develop; Technical, Managerial, Leadership and Entrepreneurial and at each level the ability to innovate. To illustrate the above Gerber [12] advocates that the true entrepreneur is someone who can conceive an idea solve the technical problems, build an organisation that runs like a machine without the presence of the entrepreneur (a viable system) and sell it as a going concern. For a business to be prosperous it must function like a machine. The type of business is irrelevant but a precise system of dynamic interplay between the connected parts should be in place. He suggests the steps in business development: are;

Develop your primary aim then develop your larger business picture. Develop an organisation capable of delivering that big picture. Develop skills in management and develop skills in your people. Develop your market and marketing activities and finally develop systems.

Is it necessary for the successful entrepreneur to master the skills and behaviours of the successful technician, manager and leader? Leader may be, but the others probably not! It may well be that the successful entrepreneur is the one who is able to enlist the services of skilled managers, planners and those that create order and skilled technicians that build the products and deliver the services. As Garrett [11] says an entrepreneur is someone who surrounds themselves with people who do the jobs that they don’t like. He also suggests that entrepreneurs typically are driven non-conformists. risk takers who are passionate about their ideas. They are persistent, show commitment and are hard working. They are usually confident in their ideas and ability, self directed and often good salesmen and leaders.

Social Capital and Networks

Social Capital as suggested by Putnum [27] is the pattern of network engagement, value systems and norms that lead to potential benefit. Where ever we are in our career path we rely heavily on Social Capital that set of relationships that we have through the networks we are part of. To be part of these networks, formal and informal we project images of ourselves, sometimes supplicant sometimes ingratiation, sometimes intimidator or we may indulge in self promotion at other times we may be supportive,

empathetic a co-coach or a mentor.

Lee [20] in his study of High-Tech entrepreneurs suggested there are two types of networks. The first he calls “Bonding Networks” where entrepreneurs mixed with family, partner, previous/current work colleagues and friends. The Bonding Network provides reassurance and support. The other dimension he referred to as “Bridging Networks” consisting of business contacts, customers / suppliers, experts and professional advisers such as business links, bank manager, accountant or lawyer.

Results from this study suggest an average participant spent 45% in Bonding Networks and 55% in Bridging Networks. Those seeking dynamic growth opportunities spent a larger amount of time and effort cultivating their Bridging Networks.

The Leader’s / Entrepreneur’s Journey

The Leader’s / Entrepreneur’s journey is like that of the hero in an epic story; Star Wars or the Lord of the Rings. Thompson [31] suggests components are :

There is a clear purpose for doing something. There is a need to bite the bullet and set off on the journey. There is an acceptance that we will change route and direction. There is uncertainty and we will face the unexpected. There are helpers, sages, mentors, family, friends and fellow travellers. There are dangers; rivals, tricksters, guardians, sentries and shape-shifters.

The NLA’s perspective comes alongside this view and puts emphasis on the possibility of these types of so-called ‘innate’ characteristics being ‘bundled’ together with the ‘situation’ of the organisation and society itself. That is to say the individual’s journey is affected by its context and in turn the context is shaped by the individual’s journey. The journey becomes a story. (Thorpe et al [32]). The story becomes a dialogue, the leader is seen as holding conversations with those around and as such shaping their world as they and others see it. The nature of the conversation determines how we perceive performance, potential for success and where we are in our progress towards goals. The leader or entrepreneur is seen as enmeshed with the world around where all factors are coming into play, and given this understanding we might now view the entrepreneur as one part of a much wider community or network of contacts and practices whose behaviours might well contribute to leadership or entrepreneurial type practice, thus challenging the nature of the leader or entrepreneur as the sole hero who holds the keys to success. Importantly all activity is seen within a community of players where practice within that community sets the conditions for the individual’s potential for change and success.

So how do we learn to be a Technician or a Manager?

To this author learning to be a manager is equivalent to learning how to be a technician. We can study a degree in Computing and we can study at a similar level in Management. How do we improve our skills in both? We practice them first in simulations of the real world in college or university. We practice them further in the real world on placements or on internships and in the world of employment. Perhaps en-route gaining experience from an MBA programme.

So how do we learn to be a Leader or an Entrepreneur?

There is a general and emerging belief through the work of those who support the entrepreneur and leadership development such as the NLA that ‘development’ needs to be focused not just on the individual but on the ‘situation’ that enables ‘leadership’ and ‘entrepreneurship’. That is the organisation and social context that presents ‘leaderful’ and we might believe, ‘entrepreneurial’ possibilities. Thorpe et al [32] suggests that “...the will to lead may be somewhat innate, but the ability to do it well is learnt.”

If you have the innate ability then it seems possible for the learner to improve their effectiveness from experience, observation and networking rather than just in a class room. As Thompson [31] puts it “entrepreneurial learning is driven by the right-brain skills of intuition, creativity and emotion, but again there is some genuine need for (left-brain) analysis to capture learning.” p(113). The consensus now in the Northern Leadership Academy (Thorpe et al [32]) is that whether improving your effectiveness as an entrepreneur or as a leader requires a process of action based / experiential learning coupled with an ongoing dialogue with the people of their community or network where that learning takes place. This dialogue again helps shape our own and others’ perceptions of what is being achieved. Thorpe et al [32] suggest that “experiential learning then needs to be supplemented by collective approaches, drawing on insights from more social theories of learning like situated learning theory.” (p. 30) Mentors and coaches have an important role to play and learning from peers and networking is valued.

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Summary

This paper develops a idea of Gerber's using a hierarchy of behaviours and skill sets associated with the roles of technician, manager, leader and entrepreneur. To this is added the role of innovator which can apply across the range of technician, manager, leader and entrepreneur roles. The work also examines some of the contemporary literature and work of the Northern Leadership Academy suggesting that any individual leader's and entrepreneur's activity is surrounded by regular dialogue with their 'world' and that they as individuals are both being shaped and shaping their experiences and outcomes constantly. The paper also uses the metaphor of the epic journey but suggest current leadership thinking casts the leader as part of a 'community of players' who contribute to a final outcome.

Key words: Leadership; Distributed Leadership; Entrepreneur; Management; Innovation.

Entrepreneurship

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- Communication and social skills
- Ability to motivate
- Honesty and integrity
- Knowledge of business
- Interest in others
- Team orientation

- Innovation
- Personal drive
- Risk Acceptance

- Belief in control
of events
- Ambiguity tolerance
- Need for independence
- Identification of market opportunities