

THE REPAIR-WORKSHOP THEORY: SUPERVISING ANATOMICAL RESEARCH

Hope Gangata

Correspondence to Hope Gangata, Anatomy Department, Institute of Clinical Sciences, College of Medical and Dental Sciences. The University of Birmingham, Edgbaston, Birmingham, B15 2TT, United Kingdom. Email hopegata@yahoo.co.uk
Phone: 00447958086787

ABSTRACT

Anatomical research remains constrained in Africa and the development of relevant anatomical leadership strategies is crucial to unlocking the anatomical research potential. The importation of leadership strategies from developed countries may not be relevant in Africa because of peculiar social, political, funding, academic and research contexts. Ambiguous leadership, characterised by unclear goals, is poorly understood and is said to be irrational and driven by pure chance. The current paper describes how ambiguous leadership unfolded within the supervision of BSc Intercalated Anatomy research projects at the University of Zimbabwe, which had an incredibly high degree of unclear goals, using grounded theory research methodology. The analysis of the results produced a rational and normative ambiguous leadership theory model called the 'Repair-Workshop-Theory', which had two types of goals: the initially unclear Year-Goals and the always clear Day-to-Day-Goals. The clarity of the Year-Goals progressed from being vague initially to being very clear at the end of the research projects, as the Year-Goals were being 'discovered', while Day-to-Day-Goals were permanently clear and were the basis of day-to-day rational decisions. The normative principle of 'discovering' Year-Goals allows goals to emerge from the interests of the students, staff and contextual constraints and has significant implications for managing unclear research goals in African anatomy departments.

Key words: anatomy, Africa, ambiguous leadership, unclear goals, garbage can theory

INTRODUCTION

Ambiguous leadership

Effective supervision of student projects requires good leadership. Leadership is generally accepted to mean an intentional 'influence' using decision opportunities by a person or teams of people that shapes the activities and relationships in an human organisation (Yukl, 2002). Ambiguous leadership models are theoretical models that see unclear goals, uncertainty and unpredictability as dominant features in explaining educational leadership (Bendor et al, 2001; Bush, 2003).

Listening to and following multiple cues in an educational system that cherishes holistic education introduces a significant amount of ambiguity (Tiernan and Burke, 2002).

Lecturing professionalism contributes towards generating multiple cues (Enderud, 1980) because of the significant professional autonomy lecturers have (Bell, 1989). Organisational hierarchies in universities promote multiple goals and favour ambiguous leadership through fluid participation, fragmentation and loose-coupling. Fluid participation characterises the phenomenon that participants in committees do not participate equally, some individuals are too dominant while some are too passive to make any meaningful contribution (Bell, 1989). The strictest sense of loose-coupling describes how memberships to committees and activities are not rigidly controlled, or at least portions of the organisation, and allows activities to be conducted as they please (Glassman, 1973;

Weick, 1976). Loose-coupling and fluid participation make it hard to sustain certain chosen goals over the long run because different people move in and out of leadership committees and the degree of leadership contributions from people in the committees cannot be guaranteed (March and Olsen, 1976; Weick, 1976).

Without question, the most famous variant of theoretical ambiguity models is the 'Garbage Can Theory' (GCT) by March and Olsen (Cohen et al, 1972; Cohen and March, 1986; March and Olsen, 1976). The GCT, also referred to as "organised anarchies" by the authors, consist of three facets of ambiguous models; namely fluid participation, unclear decision technology and problematic preferences. The GCT was presented in two parts: a verbal component and a computer simulation model that has become "the most widely cited simulation models in the social sciences" (page 113) (Fioretti and Lomi, 2010). The decision making process of the verbal GCT was regarded as an empty bin with choice opportunities, problems, participants and solutions being thrown in and by chance solutions emerging. The decisions were made irrespective of goals and the decision mechanism was so mysteriously random and happened by pure chance, like the Brownian motion collision of particles (J. Martin, 1981).

Reasons for choosing the University of Zimbabwe

The Medical School of the University of Zimbabwe (UZ), the oldest university in Zimbabwe, was opened in 1963 and is where the author obtained his BSc Intercalated Human Anatomy Honours degree. UZ was initially affiliated to the University of Birmingham, where the author is based. The school used a traditional didactic approach to teaching, based on lectures, as the cornerstone of its teaching up until the 1980s (Mufunda et al, 2007). The school was proud to have produced quality graduates and it was noted that "our doctors and nurses are as good as any others" (page 170), although the country paid heavily for the reputation when the graduates left for greener pastures (Levy, 2003).

Afrocentric leadership has been hinted to resemble ambiguous leadership models (Daniels, 2012). There are five main reasons for choosing the supervision of anatomical research projects at the UZ as a case for examining ambiguous leadership. The first reason for choosing the UZ is because it is a higher educational institution, where academic freedom enshrined in most universities translates to ambiguity of goals (Lutz, 1982). The second reason for choosing the anatomy department of the UZ is because it has been in a challenging context. Ambiguous leadership models are not well suited for stable educational institutions and seem to find relevance in institutions in tumultuous times and in periods of instability (Bush, 2003), i.e. organisations described as in "severe ambiguity" and in "trying circumstances" (page 583) (Padgett, 1980). The anatomy department in Zimbabwe had very weak staffing levels because of a weak financial base, especially during the excessive inflation years between 2004 and 2008 (Mufunda et al., 2007), and the influence of globalisation creamed off some of their the best academics (Levy, 2003). The anatomy department also suffered from the lack of international academic partners, the lack of reviewing of the anatomy curriculum and the lack of high quality research (Levy, 2003; Mufunda et al, 2007).

Thirdly, by examining the decisions made during the supervision of research in the anatomy department, there is an opportunity of examining the decisions made during the inherently ambiguous process of research (J. Martin, 1981). There is a plethora of 'unplanned decisions' in research projects. Research objectives are usually discovered along the way during the reviewing of literature and are not usually planned at the start of the research process. Fourthly, ambiguous models are said to be a poor match in general in explaining how primary and secondary schools function, but have found relevance in universities and colleges because they are much more complex (Cohen and March, 1986). The larger higher institutions have a greater likelihood of having ambiguity within it, such as the UZ with over 11000

students (University-of-Zimbabwe, 2013), as compared to smaller schools (Noble and Pym, 1970). Lastly, the practical ramifications of the ambiguous leadership models, such as the GCT, have been empirically seen in a minority of cases (Masuch and LaPotin, 1989) and the current paper hopes to provide more empirical evidence.

The aim of the study was to describe concepts underlying the ambiguous leadership decisions involved in supervising students of anatomical research at the University of Zimbabwe using a qualitative study based on grounded theory, and to produce a new ambiguous leadership theory

METHODOLOGY

The research participants were graduates of the BSc Intercalated Human Anatomy Honours degree from the UZ from 2000 onwards and their supervisors. Six graduates of the BSc Intercalated Human Anatomy degree were interviewed; of whom one later became a supervisor. The number of subjects interviewed was reviewed and adjusted during the data collection process and was stopped when there was data saturation, i.e. when no new insightful conceptual or theoretical knowledge emerged. Each interview lasted between half an hour to an hour and the interviews centred on the subjects describing their three most important decisions that were made and how they dealt with ambiguous goals during their research projects. The consent forms were ethically approved through the Ethical Approval procedures of the Department of Education in the Faculty of Humanities and Social Sciences of the University of Bath before the subjects were contacted. A grounded theory methodology was chosen because the scrutiny of data involved allows the experiences and behaviour of many people to be meaningfully understood and "lifts the data to a conceptual level" (page 636) (Suddaby, 2006) or "a slightly higher

level of abstraction-higher than the data itself" (page 147) (P. Y. Martin and Turner, 1986), so as to be generalised. Grounded theory ignores pre-existing theories during the conceptualisation of the new theory and grounded theory cannot be used to confirm old theories (Suddaby, 2006). On the other hand, critically engaging with literature on ambiguous leadership is an important part because it helps to form clear research questions and create possible facets of where the new theory can integrate with established theories (Glaser and Strauss, 1967).

The interviews were coded using three rounds of coding: open coding to assign the initial codes and themes, axial coding to refine the newly created codes and themes and selective coding focused on the major themes in the original data and previous codes. The analysis of the codes involved the generation of concepts from the codes and themes. The data collection, coding of the data and analysing of the data was a continual process, with the earlier interviews influencing and shaping the direction of the later interviews and new emerging themes followed up in the later interviews. Care was taken to ensure that the analysis process had gone far enough.

RESULTS

Description of the research supervision

For invariably most of the anatomy research projects at the UZ, the main goal was set on the first meeting between the research supervisor and the student, usually after when the student had fully registered for the degree programme. During the meeting, the scope of the research project "was made broad intentionally" (as one former student described) around a particular structure, with the say of the supervisor carrying more weight than that of the student. All the researches had two goals; to focus on the anatomical research of a particular structure and to determine the clinical or functional implication of the anatomical structure on society. Invariably the students left the meetings "not clear" (as a former student described) of the project and had a hazy idea of the two goals of the research project and felt compelled that they had to do a lot of work in order to refine the goals. The refining of the hazy ideas "took time to understand", as one former student described. The supervisor and student had so much professional autonomy that they could research on practically anything anatomical that was feasible in the local context. A literature search by the students "to build theoretical knowledge" by "reading as broadly as they could" (as described by former students) involved anatomy textbooks, anatomy journals and discussions with other members of the anatomy department. The building of theoretical knowledge helped in refining the hazy idea, over a period of about two months, to a state of having 'an idea with an outline', which was hallmarked by the creation of a 'working research title'.

The completion of a research proposal, a further month or so later, whereby the research aims, research objectives (described as "the most difficult part" by a former student), a provisional methodology and a plausible literature review were delineated and improved the 'idea with an outline' to 'an idea with some provisional substance'. The process of generating a working title or completing a research proposal was an anxious period and

the process was like being "thrown into the deep end" (a former student description) and being expected learn how to swim in the research pool. No formal research booklet or research training was given, such as how to search literature, the use of statistics, data collection techniques or research design strategies. The research process that the anatomy students followed was described as "a form of Problem-Based-Learning" (as a former supervisor described), where the outcomes are very poorly defined and the students have to 'discover' them.

The process of data collection and analysis was not a straightforward one and frequently altered the course of the research project, for example, in some projects decisions were made to make a detour and add a histological twist to the methodology. Day-to-day limitations, time and resource constrains affected the execution of the methodology and forced changes to the methodology. The final thesis was submitted at the conclusion of data collection, analysis, and completing the discussion sections of the thesis. Throughout the research project, decisions were made by the supervisor alone, by the student alone or by both the supervisor and student. The commenting on numerous drafts by the supervisors and discussions during follow-up meetings provided a platform for the sharing of ideas and of making decisions pertaining to the research project. Loose-coupling and fluid participation heavily influenced the major decisions, as evidenced by that "everyone helped in the research project", as one former student described. Interactions within the department with anatomy academic staff, technicians, other academic staff from other departments and especially discussions with the former anatomy students of the UZ, crafted and shaped the decisions made during the research project.

It was only at the point of thesis submission that the two main research goals of the anatomy projects were "fully understood" (student quote) by both the research

supervisor and the student in terms of anatomical research of a particular structure and to have a clinical or functional implication on society. Hence, the initially 'problematic preferences' of the Year-Goals finally became 'unproblematic preferences' at time of submission of the thesis.

Day-to-Day-Problems and Day-to-Day Goals

One fascinating theme that arose to the surface of the interview transcripts was the idea of Day-to-Day-Problems (DD-Probs) and Day-to-Day-Goals (DD-Goals). The educational environment in Zimbabwe, especially between 2006 and 2008, was characterised by university student protests, political uncertainty and hyperinflation. The macroeconomic environment made "bread and butter issues stressful", as one student described. The hyperinflation made goods and services unpredictable in terms of prices, availability, affordability and quality, and affected almost every facet of the anatomy research projects. The high inflation reduced in real terms the value of the local currency and made the four expatriate anatomy lecturers leave by 2008, due to the reduction in real terms of their salaries. The range of anatomy research and the capacity of research supervision dwindled after the departure of the expatriate lecturers, and encouraged a narrower view of the discipline. Research resources became very limited and as a result, decisions made were those that chose "the cheapest research project ideas" and "decisions were based on convenience and available expedient materials and time" (as the former students described). Virtually all the research projects from between 2000 to 2010 were "simple dissection projects" (quote from a former student) on cadavers that usually required simple dissection instruments, priced at around \$US10 per set.

The accommodation for students on the UZ campus was closed between the years of 2008 and 2012 because of student unrest and inflationary cost pressures, of which the UZ could not cushion. This made the students travel long distances using unpredictable commuter buses, who were hiking their fares exponentially, as petrol prices were also

exponentially rising. Laws were passed to outlaw inflation, but that simply pushed formal businesses into the unregulatable informal sector, and made the acquiring of goods and services depend on whom you could trust and whom you knew. The economic situation "made everything more difficult" and there was a sense that "had things been stable, more of our energies could have been better spent on (anatomy research) projects" (quotes from former students). Thus, the day-to-day living of the students conducting anatomy research was a challenge.

The rapidly changing environment sets the scene for introducing the concept of DD-Goals. Problems arose on a day-to-day basis and will be referred to as DD-Probs, and the decisions made were described as "reactionary to the problems", as a former student described. The DD-Probs were then analysed and prioritised and led to the creation of DD-Goals. "Priorities were changing and we had to follow-up on them", as a former supervisor said. Research decisions on a day-to-day basis hinged on the DD-Goals than on the research Year-Goals, although the Year-Goals were always at the back of the minds of the student and supervisor and these "goals (Year-Goals) were much harder to set and to impose", a quote from a former student. It became very apparent that the key to understanding ambiguous leadership at the anatomy department was by having a good pulse of the DD-Goals. The "more rapid the changes, the more frequent meetings were required with people in the department" (a description by a former student).

There was a strong link between the identification of DD-Probs and the high rate of solving problems and new problems were being created daily. When "bread and butter issues" were solved for the day, higher inflation prices the following day presented new problems. In the current study, there was a high rate of attempting to solve problems which surprisingly did actually solve most of the problems. However, the hyperinflation created an avalanche of new problems as rapidly as the old problems were being solved.

DISCUSSION

Ambiguous theory models could be normative

Ambiguous leadership models have been described only as descriptive theories, unlike most other theories on educational leadership, which are both normative and descriptive (Bush, 2003). The most fascinating theoretical conclusion of the GCT, comes from the reconciliation of the "theatre-of-the-absurd" phenomenon (where decisions usually do not solve problems), and that goals of an organisation only emerges after decisions are made (March and Olsen, 1976). Understandably, Bendor is still confused at what point actually when goals kick in (Bendor et al., 2001).

The solution lies in separating the goals into Year-Goals and Day-to-Day Goals. The Year-Goals in ambiguous leadership of the current study were only fully discovered after when Day-to-Day Decisions are made and not before, as according to the original GCT (March and Olsen, 1976). It so appears that Day-to-Day Decisions made in ambiguous leadership models of the current study initiated the process of making Year-Goals clearer. Thus, the main role of the Day-to-Day decisions in ambiguous leadership is to solve DD-Probs, in order to make the Year-Goals clearer for the organisation to follow. The continual making of the Year-Goals clearer ultimately kills the essence of ambiguous leadership and implies that ambiguity in organisations is meant to be temporary. No wonder ambiguous leadership theories have not been described as normative theories for organisations to emulate (Bush, 2003).

The evidence from the data indicates that ambiguous leadership should be seen as normative within certain aspects of the education complex. Ambiguous leadership is good because it allows the students to slowly 'discover' career strengths or interests of

students. Any student involved in undertaking a research project preferably has to choose the area of their interest and the role of the supervisor is to refine that interest. Most students starting university usually do not know what career path they will specialise in future or have too many goals. However, by the time most students graduate, they are usually clear on what career they preferably want to pursue. To dictate to students what path they should take is not advised, and so students are allowed to slowly 'discover' their career goals during their period at university. University offers the rails to nurture and develop these 'unclear career goals'. Another example would be to look at the recent trends of encouraging student-centred learning, of which the learning responds to the educational needs of the students. Educational goals for students cannot be determined before the academic level of the student is determined and learning preferences of the student are factored in (Bush, 2003), only then can the proper teaching and learning goals be 'discovered'. Pre-emptying the goals without the contribution of the student is not wise. Educational leaders ought to be aware of activities that require the participation of students and other staff present in the schools to discover the goals.

The long-term goals are meant to be rails for educational activity and this is an important point to bear in mind. Goals in ambiguous models are said to be so open-ended that it can justify any behaviour (Bell, 1989), but was not so in the current study, the Year-Goals acted as rails. The rails allowed a limited range of activity. If the research project was on a particular nerve, the student was not allowed by the supervisor to then make a certain bone the main focus of the research project. In ambiguous models, the aims or goals only become transparent after activity of people in an organisation (Cohen and March, 1986), and they can only be 'rationally discovered'. Goal

importation, while being praised for bringing clear goals and is quicker to implement, has been criticised because it forces ideas and interests that do not resonate with the students and local context, and is not sustainable in the long term. Education borrowing of educational systems of UK, Canada and New Zealand, by small countries of Barbados and Trinidad and Tobago failed because the resources, "beliefs, attitudes or cultural values" (page 35) were ignored (Lam, 2011).

Rationality and learning from past decisions

Ambiguous leadership has been given illogical names such as 'organised anarchies' and 'the theatre-of-the-absurd' because irrational decisions are said to occur by pure chance in the GCT and are called "unplanned decisions" (Cohen et al., 1972; March and Olsen, 1976). The evidence from the data indicates that ambiguous organisations have been labelled as irrational simply because the way decisions are made had not yet been elucidated. The role played by DD-Goals partially explains the mechanism of how decisions are made and hence help reintroduce rationality back into ambiguous leadership models. Furthermore, 'unplanned decisions' were actually rationally made in the study. In the corporate business world, a meeting is called for with sufficient notice time, in order make decision and hence that decision will be a planned decision.

The current study failed to find irrational decisions. One participant said the "no solution was made by chance" and decisions were made in a greatly shortened time. The process of receiving the problem, analysing the problem and finding the solution was greatly shortened, in part was due the operating hyperinflationary environment. Some company quotations for consumables ended up being valid for only a few hours or until stocks were available. Most of the planning was done mentally rather than on paper and being filed and minuted. Thus the decisions were unplanned in the sense that they were not scheduled a few days or weeks before, but were still rationally made rather than being chance decisions. Perhaps some proponents of

ambiguous models could have been fearful of introducing rationality because it might kill the very essence of the ambiguity of goals. In my current study, introducing rationality did not destroy the ambiguity of goals. Introducing rationality provides a purpose why governments should fund educational institutions with ambiguity of goals.

Reintroducing rationality and the experience factor are key ingredients for leadership learning to occur (March and Olsen, 1975). There was evidence of strong leadership learning from the previous years, remembered by the remaining supervisors and by the former students (who were most readily available and were working in the department). Leadership strategies of choosing resource thin research projects and advising on doing research in an inflationary environment were common themes throughout all the research projects interviewed. The anatomy research projects had high completion rates, signifying that it was not by pure chance that the projects were run. The solutions were virtually all intentional and did not just pop in unintentionally. The solutions were rational in the sense that they were decided upon by the student and/or supervisor and that the student and/or supervisor introduced problems (Bendor et al., 2001). The irrational GCT, that made decisions by chance, would suggest that any non-anatomist would have successfully supervised the anatomy projects at the UZ, which is not true. I am sure even a seasoned anatomy supervisor from elsewhere in the world would have been greatly daunted and overwhelmed by supervising anatomy research in a rapidly changing educational environment because they would lack the experience of leading in a rapidly changing environment with unclear goals.

So, can we salvage something from the GCT after replacing the randomness of the garbage can with rationality? For a start, the name Garbage Can Theory will have to be changed to 'Repair-Workshop Theory' (RWT) to denote that problems are identified and appropriate solutions are rationally applied, as one participant noted that "decisions were based on convenience, available materials and time".

Other parameters of the GCT will remain the same such as choice opportunities, fluid participation, unclear technologies, participants, and solutions, while the problems become the DD-Problems and the 'problematic preferences' become the initially unclear Year-Goals. The current study examined the supervision of research projects and the RWT could be applied into various other social areas settings.

Recommendations and Conclusion

In conclusion, social factors can affect anatomical research and the more we explore how decisions made in ambiguous contexts, the more we will begin to understand the basis and rationality of the decisions. The proposed ambiguous leadership 'Repair-Workshop-Theory' explaining the supervision of anatomical research at the University of Zimbabwe is perhaps the first paper supporting the use of rational decisions in resolving unclear goals. The 'Repair-Workshop-Theory' divided the goals into two types and says that in the presence of unclear goals, the always clear Day-to-Day-Goals can help resolve the initially unclear Year-Goals until the Year-Goals become clear by the end of the year.

I propose that the temporary phase of unclear Year-Goals should be seen as an important transient phase and principle in the education

of students. The unclear Year-Goals should be the rails guiding learning and should be getting clearer with time and student participation, until when they are clearest at the end of the educational season, which could be a semester, year or three year period.

Leaders in ambiguous African environments ought to pay more earnest attention to the Day-to-Day-Problems that help set the clear Day-to-Day-Goals because the resolution of the Day-to-Day-Goals will help clarify the unclear long term Year-Goals. Frequent communication with students, teachers, administration staff and technical staff is as important as placing automatic information gathering systems for detecting Day-to-Day-Problems that will help set the Day-to-Day-Goals within the running of educational institutions or departments, especially when the Day-to-Day-Problems are changing rapidly.

Whether or not we understand how the UZ ended up in the described position, the described situation is the very foundation for the future of anatomical research in Zimbabwe. It is then imperative for us, as anatomists, to engage, explore and seek to understand the social dynamics involved in making appropriate contextual leadership decisions that are critical for improving anatomical research at the UZ.

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