The Ethnography of Organisational Change Within a Lean University Programme
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This paper is a very personal perspective on Cardiff Universities' Lean University project and my role within it. The essence of Lean Thinking is a relentlessly pursuit of perfection within organisations of work. There are many principles and concepts that comprise a lean approach and indeed, make Lean Production different to Mass Manufacturing, but, at it's core, it is a scientific approach to work, a restlessness that is instilled within staff members in order to constantly challenge poor working practice and try to be the most efficient and effective worker that they can.

I will attempt to describe the transformation of members of staff who embraced the project and also, the transformation that I undertook as the project developed. I will endeavour to explain how the transformation that I undertook is actually an essential part of an organisation's lean transformation and how cognisance of this transformation is fundamental to assisting people to follow lean thinking ideals. I apologise for the in depth introspection, but I feel that there is no other way to try to describe the journey that I have taken over the last 5 years, the account of which might help people embarking on their own lean journey.

Background to the Lean University Project

In late 2006, Cardiff University embarked on a then 3 year organisational change programme in order to create a "Lean University". Lean Thinking is an approach to business improvement which focuses on identifying what customers find valuable and the consequent reduction of wasteful activities. The fundamental premise underlying lean thinking is that only a small fraction of the total time and effort when producing a product or delivering a service is actually what the customer wants. Services are redesigned, removing wasteful steps and re-focussing on service enhancement. Such programmes can often be very difficult for staff as they have to start to embrace a new way of working. Consequently, lean initiatives are often met with suspicion and resistance by workers (Radnor et al, 2006). However, lean thinking asks that the worker is an integral part of identifying problems in the process and that they should ultimately have more decision making capabilities in order to process work as efficiently and effectively as possible (Seddon, 2003). As such, successful deployment of lean *should* mean that workers have a greater sense of autonomy and feel part of a positive, productive organisation.

The Lean University programme arose because of an identified need to re-evaluate and rejuvenate the University working environment. The key objectives of Lean University were to create a vibrant and creative environment where "people are confident to act and innovate, internal and external users value services as being timely, responsive and uncomplicated and leadership is aligned and consistent to deliver our vision" (Cardiff University Strategy Document, 2006). "Creating a Lean University" (Hines and Lethbridge, 2008) outlined the initial approach that the implementation team were going to take in order to bring about organisational change.

Background to the Author

My career prior to joining the Lean Enterprise Research Centre (LERC) was spent trying to develop entrepreneurial cultures within Further Education colleges and Universities. This involved assisting students to consider and access entrepreneurial ventures, staff to develop their curriculum to include the ability to practice entrepreneurial skills and to encourage industry to proactively engage with the education institutions. When looking for a new job, I saw an advert for a position in the Lean Enterprise Research Centre in the paper and seeing the word 'enterprise' thought that this job deserved further investigation. I had no prior knowledge of 'lean enterprise' and, after having a look

at a few websites, sent in an application form. Looking back at my interview for the position, it would have been very obvious to my interviewers that I did not understand what lean thinking was. I can only imagine that they hired me based on my experience rolling out organisational change programmes. This is important to this account as it is vital that I remember, when assisting others to embrace lean techniques, the way that I worked prior to possessing lean knowledge.

The reader might wonder why the author is describing the possession of lean knowledge as an almost evangelical road to Damascus revelation?! Well, in a way it kind of is and something that shouldn't really be taken lightly. Lean awareness grows almost silently within you until the point where you find it difficult to undertake simple life tasks without considering what the best possible way to stack a dishwasher is. Ordering a cup of coffee in a disorganised, poorly managed coffee shop can become almost excruciating to the point where you consider whether you can be arrested for jumping over the counter and seizing control of the situation.

You might think that perhaps I am a naturally organised person (almost certainly a sufferer of some type of OCD), someone who is keen to take charge and have everyone singing to my tune, and to some extent, you may be right, but I can assure you that prior to my lean 'awakening' I was never one to seize control or to think rationally about how to solve problems. I liked, in fact needed, to be good at whatever I did, but I definitely did not challenge 'the system' ... I just always tried to do my best within the position I was given and tried not to ask too many questions. The truth is probably, more accurately, that not that many questions popped into my head that demanded to be asked!

Joining the LERC in 2005 was quite bewildering as I quickly realised that I didn't have a clue about what I had been employed to do. In fairness, I'm not sure that my employers had much of a plan for me other than to work within the area of Lean Service, that is, applying lean thinking to service organisations. My first glimpse into the fact that one day I might find my new area of work exciting was when I read the book 'Lean Thinking' (Womack and Jones, 1996). The book was very easy to read, made logical sense whilst at the same time indicating that there were many counterintuitive elements of a lean transformation. Whilst I see now that I didn't really understand the complexity involved within a lean transformation, I remember a feeling of learning something new, similar (yet not with the same youthful exuberance) to that of learning about photosynthesis or what malaria actually is – a fresh, new piece of knowledge and one that seemed to make sense of the world.

My induction into the lean thinking arena was mainly to accompany colleagues when conducting their research and to carry out small research tasks into specific areas. It is fair to say that for the first year of my employment, the knowledge that I had gleaned from shadowing colleagues, attending training courses and reading journal articles and books was fairly superficial, even though I could happily recite the 'five lean principles' to anyone who asked. I was also aware that an essential part of a lean transformation involved 'mapping' processes. 'Mapping' in a lean sense, describes the act of visualising how processes work.

It was mapping that offered me the first 'real life' glimpse into the 'power' of a lean transformation. I watched as colleagues led a cross functional team through a mapping session, asking the individual team members to work together to discuss and visualise the work that they do. It was clear to me that this was the first time the group actually had an appreciation of how the process operated, not just from their own perspective, but an appreciation of the work that other people had to do, the challenges that they faced and actually, how they could help each other out. It was at this point that I thought of all of my previous jobs where I had worked, really quite individually, completely oblivious to what happened to the service pre and post my 'intervention'.

At the DVLA for example, as a student earning money during my summer holidays in 1999, I was

handed forms which triggered me to input data into a computer which, in turn, printed a tax disc. I sat behind several members of staff who handed me the forms after they had interacted with members of the public. At the end of every working day, my work was reconciled against the operators work at the front desk. Problems arose when the 'cash taken' did not match the cash totalled on my tax disc printing system. These problems were widely frowned upon as front line staff would have to stay behind to figure out where the problem lay. If the guilt was yours, shame ensued. Job satisfaction came from being fast at inputting and from not making any mistakes. I was 'shown the ropes' and was expected to carry out the task to the best of my ability. I was not invited to change any way that the system worked. These were still the days of issuing only one new registration system a year and garages did not possess the ability to print their own tax discs - August was a tremendously busy month therefore. I remember thinking that it was ironic that the lowest paid member of staff seemingly had the greatest amount of responsibility (i.e. issuing all of the tax discs of 5 front line members of staff) and from all appearances, the most stress, but thought nothing more than 'isn't life odd?!'. At the time, I was simply pleased to be earning some money and was hoping that my colleagues liked me. Thinking about the 'un-lean' elements of the task now, I can see that the forms landing on my desk were what a lean practitioner calls 'first in last out'.. i.e. you would keep taking the top form to work from leaving the form that had been languishing there the longest until last. Of course, with the diminished demand peak associated with biannual registrations, dealer ability to print their own task discs and tills which print the tax discs automatically, the job role is probably now completely non-existent.

My next job was at the Inland Revenue. My role on the 'Non Contact Team' was to contact those members of the public who had declared themselves to be self employed, had not submitted National Insurance Contributions and were currently 'uncontactable'. We had to use various light detective methods to find these individuals and try to ring them at various times in the day in order to make 'contact'. The irony of working within a 'Non Contact Team' whose sole role was to make contact was, again, not lost on me but similarly, was greeted with a 'work is well weird' roll of the eyes. 'Non contactable' client files would appear in our team's in tray. We would dutifully attempt to make contact, and when lo and behold, we did manage to make contact (which was actually surprisingly often?!) we would seek acknowledgement from the customer that they did indeed owe us money, would then arrange a payment plan with them, write down what we had agreed in the file and shut the cover with a gleeful smile. The file was then put in a different in tray confident in the knowledge that 'our work here was done'. After a few months, I felt like I had sussed 'Non Contact' and was pleased that I was making contact with various debtors across the land. I was slightly sceptical about the fact that if they stated that they weren't self employed we simply wrote that the 'client was not self employed in that period' in a file and that file, like the others was shipped off to an unknown destination, but as that was none of my concern, was just pleased that I had seen the last of another case.

I will never know how many of the people I contacted actually paid their arrears, whether the people who said that they weren't self employed were telling the truth, if any further investigative work was conducted or indeed, whether I was doing my job correctly. Again, I imagine that this role now no longer exists.

This self indulgent foray into my early working experiences is very important for me to remember as these were the jobs where I was my most oblivious and now, looking back, can see how underutilised my colleagues and I were. If only someone had invited me to map the National Insurance Contributions process, then I'd know how the cases got to me and whether the work that I was doing was beneficial, whether the monies ever got paid. I realise now that I was almost unknowingly restless to know why I was doing what I was doing and 'how it all worked' but had no

notion that there could possibly be a way to help me to understand and see what was actually going on. Consequently, I felt no need to challenge it.

Later job roles offered more responsibility, autonomy and were more based on self motivation although there Is not a single job that I had that could not, on reflection, have benefited from principles and concepts associated with lean thinking. In lots of ways, I am itching to 'try again' with some of these jobs knowing what I know now, but can still look back with pride on the results that I achieved and know that I worked hard to achieve them.

So in 2006, I felt quite bewildered and unsure about whether I had made the right decision to join LERC because I did not feel, after over a year of work, I had achieved anything or was good at what I was now meant to be doing. The sporadic, fragmented work that I had been undertaking was not offering me the opportunity to practice and lead lean and consequently, I really didn't truly understand it.

I accompanied my colleague on a lean project within a hospital. The aim was to provide improvement ideas to the pharmacy but also to help MBA students to understand lean concepts and techniques. I did my best to participate and collected data that I was asked to collect. The main thrust of the activity involved 'mapping' the dispensing of pharmaceuticals. This involved creating a 'process activity map' of how a drug moved around the hospital. Basically, you track the drug's journey, how much time was spent 'working on it', how much time was spent waiting and any issues that were encountered along the way. This data can then be aggregated across the whole of their prescribing work to draw some conclusions about where improvement was needed. I greatly enjoyed the session but found it frantic and exhausting. I kind of understood what we were trying to achieve, but I was very dependent upon the direction of the colleague who was leading the session. Feeding back to the pharmacy team was also very uncomfortable. Some of the findings that we had uncovered were controversial, for example, that they could perform the same job function but with fewer people. Despite enjoying the process of finding out all of the information, I did not enjoy our group presentation back to staff. I watched with great discomfort, the faces of those employees, who had been so helpful in our investigations, realise that they were working in inefficient processes and systems. I do not feel that it is an overstatement to say that some of them appeared crushed. After the presentation, I again wondered whether I had made the right decision, leaving the familiar world of enterprise and joining the strange world of lean.

In my annual appraisal, 18 months after joining LERC, I informed my supervisors that I felt very unsure about my role within the Centre and that I needed to feel like I could contribute positively to something. It was in that meeting that I was offered the opportunity to work on the Lean University project.

Working as a Lean University Team Member

The first few months of the Lean University project, again, were bewildering. No actual 'lean work' was initiated in this time, the main thrust of activity was spent setting up the project and recruiting members if the internal change team. I felt very unsure about what work that we would be undertaking but felt finally pleased to be actually involved in a real life, large scale, lean initiative. The first project that I was invited to work was to examine the interface between the HR and Payroll IT systems. My role was to assist a very experienced lean practitioner in collecting the information required, to lead a cross functional team to discover the problems within the process for themselves and to develop an implementation plan which would make the suggested changes happen. This project gave me the first opportunity to stand up in front of a group and use the mapping techniques that I had seen from shadowing my colleagues. I was not confident however. I did not really

understand why I was asking the group to complete the exercises and was not convinced that would be able to bring them to reach a consensus about what changes needed to be made within the process. With the guidance of my more experienced colleague, over a period of 3 days, we were able to feedback to colleagues who had not been part of the project team, the improvements that we recommended.

It was interesting to observe how a group of people changed over the course of the 3 days. They started the session very sceptically, were not keen to engage and all were quite reserved. As their fears subsided and they began to enjoy the experience, their enthusiasm grew and by the end of session, you could discern that they genuinely believed in the improvements that they suggested and they were keen to implement them.

I left the three day mapping session tired and slightly optimistic, yet still not fully understanding what we had actually achieved. Disappointment ensued because when the project team set about implementing their actions were met with much resistance. The people that they needed to persuade had not been part of the lean 'awakening' process and so didn't understand why the changes were suggested. Gradually, you could see the project team's enthusiasm for the improvements melt away as they reintegrated back into their every day working lives.

This first experience of Lean University taught me a great deal. Firstly, that the expertise that my co-facilitator had was critical in terms of reacting and flexing to the needs of the group. Second, that done well, a team can change from bemused to engaged and third, that people who have not participated in the project process will not understand the changes that are trying to be made, and will fight them. I had also realised that I still had a great deal to learn.

My First Lean Project - 'Supporting Research Funding'

The aim of the first lean project that I led on my own was to improve the way that the University managed set up, managed and closed down research funds. I was very apprehensive when I embarked on the initiative but did my best to exude an air of confidence which would disguise the fact that I wasn't sure about what I was doing. Learning from previous Lean University projects where Senior Managers failed to engage and support the findings of the project teams, I initiated both a project group and a Senior Management Team project group to try to ensure senior buy in. I thought that if they were meeting regularly and learn about the suggestions that the project team (the people doing the work on a daily basis) they would be more likely to understand the proposed changes and remove any barriers blocking their implementation.

This project again, saw the same growing enthusiasm from the project team as they realised the benefits of a lean approach i.e. that it could tackle the everyday frustrations of working life and make things easier for themselves. Disappointment grew when it became obvious that the Senior Team were still not able to enact some of the suggested changes and it is my personal opinion, that this engendered a sense of 'well what's the point in us continuing to complete our actions' from the project team. Despite some of the major changes not being acted upon, several small changes were implemented which did help to make a difference in terms of how the process worked in the future. These are the sort of small changes that are conducted through a scientific approach, that lean authors such as Stephen Spear (1999) advocate.

To bring about this project, I was heavily reliant on an assigned member of staff from the Research and Commercial Division to coordinate activities and to collect the data that we needed from staff. She proved to be a pivotal part of the project, the person who actually made things happen. I realised that for lean to work, it had to be completely owned by people who actually worked within

the work area and that my contribution was actually pretty minimal. It was the key person on the ground who was negotiating with other members of staff and who was responding to queries from the project team on a daily basis which was the crux of the project. She was the one that ensured that the improvement points that were 'actioned' got done.

It was at this point that I realised the limitations that an 'outsider' had when leading a lean project. It is with some caution that I call myself an 'outsider' because in some ways, I am definitely an 'insider' in Lean University. I am an employee of Cardiff University and a beneficiary of the Research Funding process. It is interesting to note, after some reflection, how differently I am received when I now lead lean work in other organisations. There is a kind of reverence that is associated with being an 'external consultant', an air of mystique that surrounds you, I imagine because there is an assumed knowledge of experience and also, because that organisation is paying for your services. This associated 'reverie' has not been evident in Lean University. Perhaps this is because when I first embarked on the initiative, I lacked the confidence needed to lead people through change? I actually feel however, that I now possess the necessary confidence and yet still I am greeted as simply what I am, a fellow employee, someone who has no experience of the work that the teams do on a daily basis and someone who has no line managerial responsibility.

Earning the respect of a lean project team is a critical need for an internal change agent such as myself within Lean University. This can be developed over the course of working with the team over several months, but it is a very delicate relationship, one that can disintegrate when the team feel frustrated by lack of progress. To some extent I felt the disintegration of this relationship in this project. Looking back, I can see that I invested a lot personally in the project, and when changes were failing to be made, I became frustrated and disappointed myself. In a way, I think I gave up on some levels, handing over the implementation plan to Senior Managers so that they could champion the changes. In doing so, I resigned responsibility for its success. On paper, I did everything that I needed to do and it would seem only right for Managers to see implementations through in their respective areas, but if I am honest, I knew that my continuing input was essential to push some of these changes to occur. I see now what a mistake it was to almost abandon the project in the implementation phase. However, as an 'outsider' I would never have the ability to make the changes happen, that was only the domain of the true 'insiders'.

I learned two critical things from Supporting Research Funding. Firstly, that it was not just the emotions of the team that changed throughout the course of the project, but my emotions also. I experienced the same highs and lows that they experienced except, as the leader of the project, I did not possess the right to let my emotions affect my attachment to the work. How could I expect them to remain enthusiastic if their project lead wasn't? If I was feeling disappointed about project progress, they would as well. It was my first appreciation of the need to remain stalwartly positive as a lean project lead. If project teams can detect a glimpse of your fears and fatigue, it will impact them negatively. Facilitating teams through this change requires almost the abilities of an actor in a strange way! The ability to greet adversity with energy and a smile is indispensable. If you are feeling down, the negative energy spreads throughout the team. In a scary way, the role offers quite a bit of power.

In addition, as I know more about Lean Implementations, I realise how essential it is for a lean practitioner to 'practice what you preach'. Who am I to lecture people on the need to embrace smarter working practices if I myself am completely disorganised and late with deadlines? A critical part of earning the respect of the project team, I believe, is that they can see that you are reliable, trustworthy and extremely efficient.

The second critical learning point is the importance of the project owner working on the ground. Without her input, we would not have achieved the things that we did. On reflection, I could have transferred more lean knowledge to her as we progressed but I hope that the experience of the project would have embedded some skills which she could use in her future working life. It was upon witnessing the crucial role of your 'man on the ground' that I realised how important the training element of the Lean University project was. After evaluating our experience of Lean University so far, it was essential that we design a course which would equip managers with the necessary lean techniques and concepts needed to assist them to manage their work areas more effectively.

Lean Skills for Managers Programme

I passionately wanted to ensure that those people who had not been exposed to lean (i.e. me circa DVLA and Inland Revenue years) were able to learn about lean in the most effective way possible. I was convinced that in order to become a 'lean organisation' lean skills and techniques needed to be much more than just the domain of a team of internal change agents and so this training was vitally important. It was critical that those who participated in the training needed to experience the same 'revelation' as I did, the 'suddenly everything makes sense!' moment, but I also did not want them to have to spend 18 months confused and unconfident about how everything fitted together in the same way that I had done and anyway, there simply wasn't the time and resource to be able to let this happen. This was my opportunity to distil everything that I had learned, how I had pieced everything together, in order to help them to hit the ground running. I had learned how to lead a lean project through watching others, now was my chance to *teach* people how to lead a lean project. Lean Skills for Managers offered us the opportunity to set lots of little lean fires far and wide and start an organisational revolution on a much bigger scale. It was my belief also, that a Manager of a University School who discovered the problems for themselves, would be much more likely to act on those problems than if they had been uncovered by someone else from a different 'change' department. They would have the line managerial responsibility and authority needed to make things happen, a position that I just didn't possess.

So, we set about designing the programme to be as practical as possible and to build in opportunities to discuss the sort of soft skills and experiences that I have discussed in this paper. I was keen to attach learning to practical experience as it is obvious that facilitating and leading lean needs to be practiced in order to become intuitive. Indeed recently, lean expert Mike Rother explained in his book 'Toyota Kata: : Managing People for Improvement, Adaptiveness and Superior Results' (2009) that practicing improvement was a fundamental part of an organisation's lean learning journey. Consequently, a Project Based Learning (PBL) approach was pursued. PBL is a form of knowledge transfer which is designed to bring about deep learning. Participants tackle "complex tasks, based on challenging questions or problems, involving students in design, problem-solving, decision making, or investigative activities" (Thomas, 2000). This approach gives students the opportunity to work relatively autonomously and to discover new concepts and ideas for themselves. The sessions ran as follows (figure 1) and the participants were expected to complete homework between meetings.

Lean Skills for Managers

1. Getting Started	**Understanding your role as a lean facilitator and learning about key improvement ideas**
2. Choosing the Tools	**Introduction to lean tools and implementation methods**
Conduct current state mapping of your process	*5 weeks*
3. Current State Feedback	**Lessons learned and results** **Further data collection techniques**
4. Developing Future States	**Lessons learned and results** **How to develop a future state** **Lean implementations**
Conduct future state mapping of your process	*2 weeks*
5. Future State Feedback	**Lessons learned and results** **Implementation planning + measurement**
Develop implementation plans	*2 weeks*
6. Review of Course	**Review of implementation plans** **Discussion surrounding next steps**
Implement plans	*6 weeks*
7. Lessons Learned	**Feedback implementation progress**

Figure 1. Lean Skills for Managers Course

Each participant was assigned a mentor from the Lean University team who would assist them to lead their Lean University project. Mentoring also provided the opportunity to post-evaluate sessions. This would provide an invaluable opportunity to discuss sensitive issues around the change process. For example, one participant gave an extremely shocked reaction to the discovery of a big process problem that the team members had lived with for the last 2 years. This seemingly negative reaction to their honest disclosure, instantly caused the group to 'clam up' and cease the sharing of process problems. We were able to discuss the impact of her response post session, she was upset that she had reacted thusly, and she agreed that in future, she would need to refrain from providing negative reactions in a lean space.

Cohort 1

The first cohort proved to be a bit of a coup for the Lean University project as it consisted of several School Managers. These are the people that operationally manage Schools of learning and research within the University, Physics and Astronomy, Nursing and Midwifery for example. They were a very important group of people and ones that, if they possess Lean knowledge (it is worthwhile stating that many people do already possess some innate lean ability) would have the authority and drive to bring about successful improvements. One of the most powerful things that happened from cohort 1's learning was the informal network that was forged as a result. This cohesive unit, I believe, could prove to be a powerful collective force within the University to champion change.

One of the best things about Cohort 1 for me and my 'lean development' was that it forced me to think deeply about lean concepts, to really understand them. I needed to in order for me to able to teach others. I think it was only through learning how to teach lean that everything started to click into place. When trying to describe the process of going through a lean project to those who had never experienced one, I suddenly came across the idea of being like a Police Detective, trying piece together clues to solve a crime… the crime in this analogy, is the fact that the process is broken. The pieces of evidence are the maps that we create together which are then used to work out what is

going wrong. It is these type of simple, relatable analogies that I believe, help those to understand what lean is trying to achieve, analogies which I wished I had heard when I was learning what lean was about.

Of course, true learning only comes from putting ideas and knowledge into action, but a critical part of being able to do this successfully, is possessing a kind of confidence and understanding about why you are carrying out the tasks that you are carrying out. I believe that good training can help people with this.

The Lean Skills for Manager's Programme still continues today. 6 cohorts of Cardiff University employees have been through it now. Project completion rates have been patchy, but what is clear, is those people that have passed through the programme and 'get it' continue to use lean skills within their own work area. Nursing and Midwifery now have their own lean programme and several people have been through the training, completing many lean projects. It is this sort of ownership by staff which will help Cardiff University to become a lean organisation. We continue to develop and update the training in line with participant feedback and what we have all learned.

Final Thoughts

It is clear, when you witness many people develop lean practitioner skills, that people need to perfect their own style and technique when leading people through a lean change. Developing their confidence, however they choose to manage a project, is critical regardless.

I am fully aware that I am not the best lean practitioner in the world, there are some things that I am good it but I still have plenty of shortcomings. I'm reliant on other people within project teams to fill the gaps created by my weaknesses. What I believe is crucial as a lean practitioner, is to undertake the type of reflective activity that I have tried to express in this paper. It is only through undertaking this reflective activity that you can appreciate truly how to assist people on their own lean journeys. Once I had pieced everything together and reflected on the things that had worked and those that hadn't, I am able to change so things are better the next time. **The art of becoming 'more lean' involves applying an improvement lens on the act of improvement itself and it is this 'scientific approach' to work (as discussed by Spear (1999) and Rother (2009)) which is an essential part of a lean revolution.**

I hope that this paper has also stressed the essential role that teaching and coaching possesses within a lean transformation. It not only assures the osmotic spread of lean thinking, but it forces the internal change team to think more deeply about the work that they do in order to assist others. It also encourages the internal change team to be better at leading lean projects as they need to be able to use their work as exemplars for training purposes.

There is no final endpoint to becoming a lean organisation. It involves constant pursuit of perfection: A pursuit that is not only adopted by the organisations, but all of the individuals working within it, a true learning organisation (Senge, 1990). I will continue to strive to be the best lean practitioner I can be. The key to achieving this is to critically reflect on my progress and experience and most importantly, to learn.

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