Fellow Leather enthusiasts;

It’s a great personal honor for me to be standing before so many knowledgeable peers and business leaders from our beloved leather industry. Today I am here on behalf of Stahl Chemicals, a company that is proud to have been the sponsor of the Wilson lecture since 2004.

To be truly honest my knowledge of the great man it’s named after was very limited so I decided to do a little research and thought it might interesting for all to know a little more about him.

John’s introduction to the leather industry was probably pretty similar to most people in the room today including our guest expert. It was not his first stop after leaving school, he actually fell into it by accident and to quote Rachel “The best accident I ever had”. John actually arrived in the industry via grade school in Chicago and thereafter furthered his studies in New Jersey/New York and eventually Leeds, UK.

Some people may consider him an industry freshman as he only spent 30 years working with and studying leather! In that time his research and new ideas helped shape the leather industry into what we have today. Unfortunately John was taken very early and sadly passed away in 1942 at the relatively young age of 52 years.

Anyway, “back to the future.”

It’s with great pride that I introduce a fellow “Brit” who has also helped improve both ours and the public’s knowledge/impression of the leather industry.

Rachel started her leather career at the world-renowned BLC technology center where she continued to study and obtained both Bachelors and Master’s Degrees in Biology and Leather Technology. Her next stop was as Director at ICLT where she remains until this day and which has proudly maintained 100% employment success for its students.

Esteemed guests it gives me great pleasure to present Ms. Rachel Garwood.
Leather Education – Preserving the Past…
Investing in the Future
by
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Abstract

“Challenges facing the leather industry” commonly include environmental legislation; the need for green chemistry, traceability, ethical sourcing and the list goes on. One issue that is crucial for the sustainability of the global leather industry and is often overlooked is “succession planning”. With large cohorts of employees due for retirement between now and 2020, the demand for quality leather graduates is ever increasing, placing a heavier reliance on higher education.

In this review, the history, the present and the future of leather education are explored. What has driven the transition from “chalk and talk” to delivery via virtual space? With advanced information technology we are also facing a changing student and today’s student does not expect to be spoon fed the facts. Today, they have ready access to information on the Internet, so classroom delivery takes on a very different approach. Modes of delivery now incorporate social media, discussion boards, blogs alongside tutorials and seminars.

The ability within education to address these changing demands and an understanding of the ever-changing market pressures will support the sustainability of our high value industry.

Introduction

It is with both immense honor and pleasure that I am here to present the 2016 ALCA John Arthur Memorial Lecture on the subject of Leather Education.

John Arthur Wilson himself clearly demonstrated the importance of leather education through his worldwide contribution to the understanding of leather science. During his two-year’s study at the University of Leeds in UK, he became an award-winning student under the renowned Professor Henry Richardson Proctor and, like his mentor; he later made significant contributions in the field of leather science. In 1923, Professor H R Proctor was referred to as the “father of leather chemistry” and in 1929, John Arthur Wilson published “The Chemistry of Leather Manufacture”; both men are still referred to in modern leather science education today.

Heraclitus of Ephesus (544-483BC), is quoted as saying "there is nothing permanent except change", a phrase I am sure to which we can all relate. He also wrote “the hidden harmony is better than the obvious”, perhaps presaging the development of leather science some two thousand years later! Whilst reasoning on the world order and human life in the temple of Artemis and inscribing his work in soot on papyrus roll, I am sure Heraclitus could not have foreseen how right he was to be. Today, he would use his smartphone to communicate with philosophers all over the world by videoconference, create a collective work using Fileshare and publish it online. He would then defend his theories at an international conference, where he might appear on stage as a 3D hologram. All this is already possible.

During his 2012 John Arthur Wilson Memorial Lecture, 'Leather Science: Requisite or Requiem', Covington concluded that not only is there a shortage of qualified people to sustain the leather industry, but also there is a diminishing pool of research leaders to inform leather education. Later, in Glasgow in 2015, he expressed his views on change:

“What controls the rate of change is more fundamentally the supply of people who can create change, continue development, maintain the European edge in the sector. But, where do these people come from and how many do we need? To paraphrase an ancient roman question about who guards the guards… who will teach the teachers…?”

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Author e-mail: Rachel.garwood@northampton.ac.uk
Perhaps we should also bear in mind the Chinese aphorism: "we are cursed to live in interesting times." Just substitute ‘interesting’ with ‘changing’.

These thoughts highlight two critical factors currently having a significant effect on our leather industry: firstly, the rapid rate of change, particularly in the field of information technology (IT) and secondly, the supply of educated people to manage this change. Education has an important part to play in both. Education’s ability to accommodate IT developments and transpose them into innovative pedagogical deliveries within tertiary education is crucial in supplying industry ready graduates for the long-term sustainability of our high value industry.

In the journal of the Corium Club of the National Leathersellers College of London in 1926, the eminent academic Smithells reflected on a conversation he had with a tanner in 1889, when he observed that ‘if the leather manufacturers wanted special leather science, they must get a special man’. The result was beginning of the career of Henry Proctor. In the same journal, an anonymous writer speculates on the future of the leather industry. Two quotes are worth repeating.

“...The future of the industry depends on progress and progress will only be obtained by a thorough understanding of the materials with which we work; and how can this be obtained? Purely and simply by research.”

“...practical men are very necessary, just as are our limbs, but the practical man of the future will be of little use without the scientific knowledge and understanding, any more than the limbs without the guiding and directing influence of the brain.”

In the last one hundred years, most would agree that the start was auspicious and there have been many important contributors to Proctor’s legacy, our current body of leather knowledge. However, it must also be admitted that the concept and objective of the technologically and scientifically literate tanner has not been universally achieved. That is, leather education in UK and the rest of the developed economies has not been as successful as the industry actually needs.

This paper will review the history, the present and the future of leather education and examine what has driven the transition from “chalk and talk” to potential delivery via virtual space.

Where are We Today?
To put this treatise into context, it is important to understand where we are today. In addressing the current challenges facing the global leather industry, the usual topics relating to technical problems or the supply chain do not often include the concept of “succession planning”. As reported in World Leather Magazine in 2013, Professor Nick Petford, vice-Chancellor of the University of Northampton, pointed out that many companies in all parts of the leather industry are currently looking at the age profile of their employees. In many instances, they have a cohort of employees who will retire between now and 2020. The demographic challenge being faced by many companies with large numbers of these people, together with the on going restructuring in the industry, are just two of the current problems creating the need for more well trained staff throughout the leather sector.

The search to find new staff is not as easy as it was in the past. Normally appropriately trained staff move forward from the younger generation and so business goes on in an endless cycle. This time it is not so simple. Whilst the generation that is coming up to retirement is a large one, the next generation in the line of employees is small by comparison and does not have the numbers and skills to fill all of the gaps. The outcome is that those born between 1980 and 2000 will have to move quickly into senior positions.

Furthermore, the “leather industry” is bigger and more complex than it used to be. Heightened interest in supply, quality, traceability, end of life and environmental matters means that companies involved in using and supplying leather from all areas in the value chain are now looking for staff with some level of technical knowledge of leather. Therefore, it is important to remember that whilst preserving historic scientific heritage, the present body of knowledge, investing in the future generation of technologists and leather scientists is crucial for securing the long term sustainability of our industry.

"...Since we bought the largest tannery in Ethiopia and began our expansion into the manufacturing of finished products we have embarked on a cautious but steady plan to grow our business. This means that we need to continuously recruit technicians to support that development. This is becoming problematic. The supply of good technicians is poor and we are very dependent on The University of Northampton for the new staff we need to secure our growth plans.”

Reg Hankey, CEO, Pittards, UK, 2012

History of Leather Education in UK
The well known figure in the global leather industry and technical editor for World Leather Magazine, Richard Daniels, has extensively researched the history of “leather making and education in Northampton”, with the main milestones outlined in Figures 1-3. In 1524 records showed 15 tanneries and 1 fellmonger to be present in Northampton increasing to 42 tanneries and leather dressers in 1960, making Northampton a
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1176: King Henry II paid three shillings for John, clerk to his daughter Alionara, Queen of Spain, to stay at “School” in Northampton.

1265: University dissolved after town capture by forces of King Henry III. Scholars involved in the struggle came near to losing their heads.

1541: Grammar school founded by Thomas Chipsey in Bridge St.

1557: School rehoused in the old Church of St. Gregory. Closure 1864.

1867: School reopened in the Corn Exchange (Market Square). Private schools started at other locations with classes in science and art.

1870: School relocated to new premises at Abington Square: science classes subsidized by town transferred from private schools in 1876.

1879: School split into Classic and Commercial (Technical) schools: common syllabus to a certain stage, but then specialization.

1885: City and Guilds of London Institute provide finance to scheme of examination for the development of scientific and technical education.

1887: A tanning class started with 15 students.

1911: Premises made over completely to scientific and technical education with name changed to Northampton Technical School. The Grammar school was relocated to Billing Road, Northampton.

1920: Tanning and Boot and Shoe departments relocated in an adjacent tannery fitted with model equipment in St. Michael’s Road.

1932: Tanning and Boot and Shoe departments relocated in the new Technical College, St. George’s Avenue, Northampton.

1979: Leather Department and The National Leathersellers’ College merged within the Park Campus of Nene College, Northampton.

1999: Nene College designated as University College Northampton.

2005: UCN became The University of Northampton.

Information: Northampton Studies, Northamptonshire Central Library. Research: R.P.Daniels

RIP town ripe for leather education. Comparing these numbers to today’s total of 24 tanneries, representing not just Northampton but the whole of the UK, is a stark reminder of the rationalization and shift in production the industry has undergone over recent years.

Figure 1 shows the main milestones outlining education in Northampton and the introduction of technical schools and colleges, which eventually led to the presence of specialized leather education. Daniel’s review of education in Northampton traces back to 1176, when King Henry II was recorded as having paid three shillings for John, clerk to his daughter Alionara, Queen of Spain, to stay at “School” in Northampton. Note, but for an unfortunate incident in history, the University of Northampton should have just celebrated it’s 750th anniversary!

The formation of technical schools began with the first tanning school appearing in 1887 having a cohort of 15 students. Beeby Thompson established this school, with the first lecturer being W.N. Evans, a vegetable-tanning specialist from Bristol. In 1920, “Tanning” and “Boot and Shoe” departments were formed and eventually became located in the new Technical College, St Georges Avenue, Northampton in 1932. David Woodroffe became the first Principal of Tanning and Footwear in 1947 before the department was divided and he became Head of the “Leather Department” with J.H. Thornton becoming Head of the “Boot and Shoe Department”. John H. Sharphouse, well known for his still much used book “Leather Technicians Handbook”, became Head of Department in 1957-1975.

In 1979, the National Leathersellers’ College in Bermondsey, London merged with Nene College, Northampton to form a purpose built school on the College’s Park Campus. This new leather education facility was funded by the Worshipful Company of Leathersellers and named the British School of Leather Technology (BSLT): the Head of School at the time was Dr Richard Roy, 1985-2005. The College gained full university status in 2005 and the department was rebranded as the Institute for Creative Leather Technologies (ICLT) in 2009. The idea of becoming an Institute and incorporating the creative side of the industry was to enable leather education to reach out across the whole supply chain including fashion and design. By increasing the education portfolio, programs now include footwear and fashion running alongside the science and technology of leathermaking.

The evolution of education is enriched by paralleled research activities, with the most successful institutes delivering “research informed teaching”, supported by JS LTC and JALCA, the two most important refereed journals within the industry. Milestones are also (infrequently) marked by leather publications shown below, typically created by globally renowned figureheads in the leather industry.

Figure 1. Education in Northampton 1176 to 2009.

Information: Northampton Studies, Northamptonshire Central Library. Research: R.P.Daniels
Roger Barlee, from the tannery “J HEWIT & SONS LTD”, UK, has captured the contribution of educational value within a commercial environment with his reflective piece given below. It is heartening to see that over the period from 1908 to the present day, leather education has played a vital role in the tannery’s success.

However, there is an imperative today not to be complacent. Harking back to the quotes from the Corium Club Journal, progress in the global leather industry has always relied on a blending of leather technology and leather science. But, as observed by Covington (ALCA 2012):

“centres for teaching leather science with technology are not great in number, thereby limiting the opportunity for prospective leather scientists to enter a subject which serves a very large global industry.”

He identified the existence of 13 such centers: it is now estimated that institutes offering Higher Education in Leather Technology and Science around the world are more like 6, with the main ones as follows.

- Institute for Creative Leather Technologies (ICLT) UK
- Centro Tecnologico do Couro (SENAI) Brazil
- Sichuan Union University China
- Anna University/CLRI, Chennai India
- Igualada School of Engineering Spain
- Ege University Turkey

Figure 2. Education in Northampton: School Locations.
The limited number of institutes, along with the departure of the leather industry from much of Europe and North America in the last part of the twentieth century – and the careless use of terms such as “heavy metals” and “toxic chemicals” when tanning is discussed – have also slowed the interest of young people to enter the industry. The low student uptake for leather education was one contributing factor to the demise of renowned leather education institutes such Lederinstitut Gerberschule Reutlingen, Germany and Leather Industries Research Institute (LIRI), South Africa, also including the closure of the leather department in Leeds University of UK in 1969. Throughout these hard times, the presence of the Institute for Creative Leather Technologies, ICLT, (formerly British School of Leather Technology, BSLT) remained, but not without a struggle to embrace changing market needs, from both an industry and student perspective.

Today, we see the need for leather knowledge having a wider importance throughout the value chain, with all participants from the farmer through to the manufacturers and retailers seeking a more in-depth understanding of leather as a material. This is reflected by the level of both industry and student interaction within ICLT, both of whom are considered customers. ICLT’s core product is producing Higher Education for students alongside ensuring graduates are armed with the necessary knowledge and transferable skills to meet the needs of the commercial sector. The success of this has relied on reacting to
J Hewit & Sons Ltd - Leather Science Education
1908 - Present.

“My great uncle was the first member of the family to go through a formal leather tanning course at the Herold’s Institute in London graduating in 1908. Hewit Lawson’s time at college certainly had an effect in the Company as far as purchasing new equipment. In the following few years the Company purchased their first 5 drums along with, amongst other things, a printing machine, staking machine and a shaving machine. Unfortunately this modernisation stalled with the First World War. Hewit and his younger brother after serving for 4 years both lost interest in the business and only appear to have stayed on as they were not prepared to go against the will of their Father. As a result little or no progress was then made until 1948 when my father joined the Company. As an aside, David Tuck, who later became a lecturer at the Leathersellers’ was employed by Hewits in the 1930’s but left as he was unable to change anything. My Father George Barlee joined the Company on his return from the Royal Navy and went to the Leathersellers’ in London 1948-1950. David Tuck took George under his wing, possibly as he knew what a hard task he would have modernising the Company. On my Father’s return to Edinburgh he demonstrated to his two uncles that, with a bit of corner cutting, you could tan and finish a calfskin in under a week.

Not only has the content of delivery at ICLT changed to accommodate industry needs but also the mode of delivery. No longer can all companies afford, from both time and monetary perspectives, to send employees away for long periods of education. As a result, teaching has moved from “long and thin” to “short and fat” units of delivery. A prime example is the MSc Leather Technology (Professional): this one-year course is packaged in such a way as to offer a mix of both on- and off-campus learning. The new structure intensively delivers the program’s theory and practical elements on site at ICLT over a period of three months, with each individual module running over a period of two weeks. Students then return to their company to complete their written assessments and research dissertation. As well as serving as an academic program, the theory and practical element can also be taken as a continuous professional development course (CPD), ranging from 2 weeks to 3 months duration. This mode of delivery creates a multi-product available to a wider audience, thus increasing student numbers and income for the institute whilst meeting market demands.

Following the generality of the Heraclitus quote, John Dewey, the American philosopher, psychologist and educational reformer, is also correct in saying, “…if we teach today as we taught yesterday, we rob our children of tomorrow”. Which leads nicely onto the next consideration, the evolution of teaching in Higher Education.

Evolution of Teaching in Higher Education

The traditional teaching method was “chalk and talk” or “teaching by telling”. Historically, but still to some extent, lectures were situations where an expert would stand at the front of the class and pass across his/her knowledge en masse, often by
scribing on a black (white) board. Students would learn this material and then regurgitate it within an exam environment. Of course, assignments were set to test the application of knowledge, but not in the ways they are done now. Today's student has changed with the times: the traditional modes of delivering information, such as lecturing, are not designed to hold his or her attention, simple telling of what is needed to be known, a spoon fed mechanism, is not acceptable. Access to the Internet has changed everything. Modes of delivery now incorporate social media with associated discussion boards, blogs, tutorials and live or on-line group sessions, where acquired knowledge can be applied to commercial situations.

The introduction of the World Wide Web has made information readily available to all and thus affected the way we teach. Indeed, during lectures, students are simultaneously goggling what is being delivered!

This increased availability of information has led to changes in teaching methods. Face to face contact time now takes on a different format: common ways, particularly with smaller cohorts, are to use workshops, seminars, team based learning and 'flipped classroom' approaches. In this situation, 'class time' (which could be physical or virtual space) is used for exploration, analysis and application rather than transmission of information.

Recent studies by Freeman (2014) compared student performance in undergraduate science, technology, engineering and mathematics (STEM) courses when taught by traditional lecturing versus active learning. They documented that average examination scores improved by about 6% in active learning sections, and that students in classes with traditional lecturing were 1.5 times more likely to fail than were students in classes with active learning.

Within a recent report to the European Commission on "New modes of learning and teaching in higher education" (October 2014) it was outlined that whilst the conventional setting of the lecture hall will continue to form the bedrock of higher education systems, it will be enhanced by the integration of new tools and pedagogies, and it will be complemented by many more online learning opportunities. Indeed, a plethora of new terms have been making recent headlines in higher education – xMOOCS, cMOOCS, SPOCs, DOCCs… - with the promise or threat, that digital technology will revolutionize the traditional bricks and mortar universities. This together with digital platforms and portals has accelerated the growth of on-line study and the emergence of short focused on-line courses.

Most people are familiar with the concept of Distance Learning (DL). Historically this has been paper led, but due to the rise of the worldwide web it is now predominantly delivered electronically.

**Definition of Distance Learning:**
A method of studying in which lectures are broadcast or lessons are conducted by correspondence, without the student needing to attend a school or college

As defined by The Oxford Dictionary [accessed 10.04.16]

A distance learning module is one in which (1) the entirety of the module is taught via the virtual learning environment (VLE), and (2) students use that environment to access a variety of pre-prepared learning materials, including open educational resources (OERs) and to interact with their peers and tutors. Whilst a distance learning module does not involve any face-to-face contact time, this does not mean that such modules do not have any staff contact time, as an essential part of a distance learning module is the work that staff do to support and guide students via the use of discussion boards, blogs, journals, virtual classrooms, etc., and to develop the learning community. Distance learning modules should not be confused with MOOCs (Massive Open Online Courses), which are typically short, free, carry no academic credit and make minimal use (and often no use) of student-tutor contact time.

As well as the emergence of the worldwide web, other factors are also influencing student expectations. One of these is the rise in student fees, particularly for the UK. Students are now questioning more closely what they are receiving in return for their money, which raises the question of how much contact time should students be receiving and where the value lies. Should students be given a total Campus experience or do they expect a more blended approach? Students display a range of attitudes toward the possible approaches to blended learning – from those who love it (more flexibility, independent learning, autonomy, etc.) to those who hate it and want a Campus based experience.

**Definition of Blended Learning:**
"a way of studying a subject that combines being taught in class with the use of different technologies, including learning over the Internet"

As defined by The Oxford Learner's Dictionaries [accessed 10.04.16]

Distance learning is not currently a common mode of delivery for leather education, most likely due to leather being predominantly a practical subject and also a tactile material, however, the concept of blended learning is commonly employed.
Recent feedback from ICLT students indicates that significant value is still held in the on-campus experience. It is not all about the transmission and application of knowledge between tutors and students but also what students learn from each other. Given the international intake of students within ICLT, students have differing manufacturing experiences to share with each other and provide enrichment within group workshops. The close networking and solid lifelong friendships made during their study years are reflected in the ongoing success of the University’s leather alumni club, The Corium Club, mentioned above. This was inaugurated at Leathersellers’ Technical College, London in 1920 and is still active today, with events being held around the world and via social media.

An example of blended learning is the MSc Leather Technology (Professional) described earlier where delivery is offered both on-site and off-site, with reliance on on-line access. This scenario is facilitated by Northampton’s Integrated Learning Environment (NILE), which essentially is an on-line blackboard or VLE. This tool enables students and tutors to communicate electronically with course material, discussion boards and the electronic submission of assessments and subsequent feedback.

Over the next 10 years, e-learning is projected to grow fifteen-fold, accounting for 30% of all educational provision (EU report 2014). Education has adopted and adapted technology and is still in the process of absorbing and applying the implications: this alone can place additional pressures on teaching staff, since not all are technology experts. New technologies and associated pedagogies require very different skill-set from the more conventional teaching. Teachers have to embrace a changing role, from knowledge transmitters and experts in a particular subject, to mentors and facilitators of critical thinking. Indeed, who is going to teach the teachers during this period of rapid change….?

Today’s student expects smart phones or tablets to play a standard role in the receipt of course information and delivery. E-books now play a crucial role in student education. Whilst these are limited within the field of leather, students now have electronic access to the technical arm of World Leather Magazine as a standard offering of their education at ICLT, this enables them to kick-start their literature research without getting out of bed! At what point will they be able to control tannery drums and chemical dosing via the same method…?

**Future Challenges**

So, whilst positive changes and advancements have been made in line with meeting market demands and expectations within leather education, all is not perfect and challenges will always lie ahead, with the two most likely being Global/Government changes and student expectations.

To a certain extent the first factor is out of our control, but may encompass issues such as UK Visa and immigration (UKVI) regulations that can impact on the accessibility of international students into UK HE. The recent UK Higher Education white paper, released May 16th 2016, proposes the go ahead for private companies to set up as universities with no minimum cap on student numbers, thus increasing the competitiveness of the HE sector.

Student expectations are compounded with the price of courses in higher education, particularly in the UK, where universities are obliged to charge the full economic cost because they are no longer subsidized by government. As a result, students are more critical of universities, looking more closely at the quality of teaching and receiving “value for money”. The development of data capture has enabled the education system to become more transparent, with statistics being readily available to students such as, student satisfaction, retention and graduate employment.
This alone increases the competitive nature of the HE sector, with each university constantly looking for ways to differentiate themselves from others. Maybe the University of Northampton is fortunate; no other University in Europe is able to offer a BSc in Leather Technology with a full working tanner.

Matthew Taylor (Chief Executive of the Royal Society of Arts) received an Honorary Doctorate at the July 2015 University of Northampton Graduation, and offered the following advice to fellow Graduates:

“You may be breathing a sigh of relief that after 20 odd years you’re coming off the education treadmill, but my advice is this: those learning muscles that you have strengthened over your time here, keep building them and don’t let them sag. Don’t ever stop learning. Some of you may have finished full-time education, but you are only just starting a lifetime of learning.”

Conclusion

For those that claim they are leather experts, they are telling an untruth. It is impossible to know everything about leather. The modern leather industry starts with the live animal and finishes with an end product being fit for purpose and safe and legal. Education of the next generation of technologists and scientists must reflect the wider implications of the supply chain, to prepare the tanner for the influences each element of that chain will have on his operation.

More than this, the global leather industry needs to reflect on the state of leather education. It is clearly a relatively small activity. The size of the global leather industry is big: the annual turnover is of the order of US$ trillion, bigger than several other major commodities put together. Therefore, in order to maintain its position in the world’s economy, the supply of qualified persons ought to be increased. The ‘critical mass’ of such persons is a long way away from the current production from the small number of institutions around the world.

To meet the needs of the industry, it is necessary to inform, excite and bring the younger generation into the industry. Part of the attraction has to be delivering their education via formats they have already accepted in their social interactions.

Change is implied in the precepts of ‘continuing professional development and life-long learning’. In this ever changing environment…

“Every day’s a schoolday…” R Garwood 2016!

References