HAVE WE MISSED THE TRAIN? - A DISCUSSION ON THE PASSING ON OF DYING TRADE SKILLS

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SUMMARY: We live in a world where production times are cut to the bare minimum, where machine centres carry out operations that machinists of fifty years ago could only dream of with an accuracy seldom found even in a tool room. Why then should we seek to keep old trade skills alive?

The need to perform a job in the same manner as tradesmen in times gone by and not take the often easier course of using today’s technology to improve the process, is part of the realisation that the skill, as well as the final objective, is also important.

As the composition of our workforce changes, terms such as ‘rivet boy’ are no longer acceptable, and a shout for a dozen ¾ by 3 inch rivets can no longer be heard ringing through a workshop; a part of our history dies forever with their disappearance. These skills cannot be taught in a classroom by people who have not spent most of their lives “on the tools”, on the workshop floor. Should these dying trade skills become “core business” for cultural institutions as much as the objects themselves are, and if so, should a secure and on-going funding stream be established?

As the last keepers of these old trade skills reach the end of their working lives, and the risk of losing these skills becomes a reality, have we missed the opportunities to transfer this expertise to another generation of tradespeople?

Mainstream industry is not in the business nurturing skills that will probably never give them a return on their investment, and the public institutions are struggling with ever tighter funding constraints and are unwilling to commit valuable resources to such projects. The traditional work spaces, such as the Large Erecting Shop at Eveleigh, are also being lost as they are converted to more cost efficient applications.

Have we, as cultural institutions, preservation groups and others concerned about our heritage, missed the train with our lost opportunities, or are these skills simply not worth saving?

Once upon a time, in a place not far from here and in a time not too far in the past, there were two tradesmen. One was a blacksmith and the other was a mechanic, and each, in his own way, shaped metals using his own hands and ingenuity, as well as time-honoured techniques. Today, however, these skills have been significantly diminished; the same enormous leaps in technology that have enabled tradesmen to mass-produce almost any item through automation and computerisation, have also caused a decline in the basic trade skills from where these abilities first sprang.

Over the years, the blacksmiths’ and mechanics’ trades grew and evolved into specialised areas. From the blacksmiths’ trade came boilermakers, riveters, markers-out and angle-iron smiths, to name but a few. The mechanics developed into diverse fields such as mechanical fitters, steam fitters, machinists and tool makers, among others. These tradesmen, given a drawing, could produce any item – whether it be a locomotive boiler or a headlight switch.

So what is so different today? Locomotive boilers can still be manufactured, and today’s fully welded versions are compact, water-tight and economical to run. Light switches are also still produced, but now in their millions on assembly lines, in a range of colours and shapes and of a far more compact design. These items can be ordered from around the corner, or around the world, with just a few keystrokes to connect to the Internet.

But, as members of cultural institutions and preservation groups, we have to ask ourselves whether this type of modernisation is appropriate for our type of organisation. Should we not consider the way in which an object has been constructed just as important as the object itself? If an object has been completely rebuilt using modern materials and techniques, has it not lost its intrinsic value as an artefact of a time gone by? To keep a locomotive operational, for example, by fundamentally changing the way in which it was built – whether by replacing riveted joints with welded seams or plug cocks with ball valves – have we remained faithful to our stated aims of preserving the object in the truest sense?

It can be argued that to repair such items in their original form is too expensive an endeavour, not only because the traditional methods are time-consuming and
Take rebuilding a locomotive coal tender, for example. Does it lie with an industry which no longer teaches and develops these skills? No. We should not expect companies to outlay money for trade skills they do not require and which will not turn them a profit.

Does the blame lay with the TAFE colleges, who run courses only to suit industry? No. It is uneconomical and unreasonable to run classes for the benefit of three or four students.

The blame for this shortfall in such highly specialised and endangered trade skills falls squarely on us – the very groups and organisations claiming to be in the business of preserving our heritage.

In NSW, how many steam fitters, and I mean the type of fitter able to hand scrape a safety valve base to a boiler, have we produced in the past ten years? The modern practice of using surface grinders and gaskets wherever possible has seen the skill of hand scraping fall into disuse within industry. How many boilermakers, of a calibre able to mark-out, cut and roll a tapered boiler, and then rivet it together, have been trained in the last decade? I’m not talking about volunteers; dedicated amateurs who, although they are the very backbone of many of our organisations, are able to commit themselves to only a few days per month, and so, can never develop the kind of expertise learned by tradesmen who spend their working week using these skills. I am talking about full-time trainees, nurtured from apprentices to fully-fledged tradespeople. I would be so bold to suggest we have trained very few in this manner – almost certainly less than I could count on the fingers of one hand.

During the 3830 reconstruction project, much extra work was created by the Museum’s insistence on riveting the coal tender, hand-scraping metal-to-metal boiler mountings, screwing and beading wall stays, and riveting boiler repairs such as firebox seams, the fitment of the new tube plate, the riveting of the front tube plate to the angle ring and the rivet replacement in the foundation ring. This extra work created an opportunity for the Museum to train an apprentice within these fields, and give some experience to a large number of apprentices who were involved with the project through the Hunter Valley Training Company in Maitland.

So, are these skills actually worth saving?

Take rebuilding a locomotive coal tender, for example. To construct a tender for an average sized locomotive using the traditional method of hot riveting, will cost approximately twice that of manufacturing a fully welded one, and will take nearly three times as long. A welded tender will be more reliable with fewer chances of leaks developing, and the only difference to most people will be the “lumps” down the sides. So, why bother to rivet one at all? Because, as time passes and the generations of Australians who never saw a steam locomotive in general traffic increases, people will come to believe that locomotive tenders were always welded. After all, they’ve never seen anything to the contrary. We, in our preservation groups and museums, might always know differently, but is that any excuse to manipulate the history that we present to our audience – no matter how minor it might seem?

The use of ball valves instead of plug cocks on the steam delivery lines to an injector are another such example. The ball valve is a “bolt-on/bolt-off” arrangement which works very well and requires little or no maintenance. The plug cock requires frequent attention, needing the gland repacked and the cock lapped regularly, and even when looked after correctly, it still has a tendency to leak. Indeed, photos of steam locomotives when in regular service often show a trail of steam wisping from the injector overflow. The use of ball valves, then, doesn’t show the steam locomotive as it would have been when in service, but shows a slightly altered view. This might seem insignificant when looking at the steam locomotive as a whole, but when a large number of tiny and insignificant components are modified, the overall picture of the steam locomotive has been changed.

Many museums and preservation groups believe an operating object is a far more potent experience for our audiences than an idle piece of machinery lying static beneath glass; that a locomotive charging up the mainline tells a more effective story than one sitting cold and dead within a building. With the operation of these objects, however, comes on-going maintenance – the work is not finished simply because the object is running. And every component on an operational, engineering item is subject to wear on some level, and someone at some stage will have to repair it. If the person charged with such maintenance and repair has not had a proper “historical” grounding in the area in which they are working, it is incredibly easy for small additions and changes to be made, until metal-to-metal surfaces are all gasketed and plug cocks have all been replaced by ball valves.

Amongst steam locomotive operators, over the past few years, incidents caused by a lack of maintenance have begun to occur. Although the people involved often possess engineering trade skills, they lack the special expertise in the field that a proper grounding in the old trade skills would have given. One example that springs to mind is a derailment caused by thin flanges on a railway locomotive, another is a catastrophic injury caused by the incorrect fitting of a fusible plug.

It seems obvious to me that if these locomotives are part of a collection, they should be treated as core business,
and, therefore, so should the training of the people who work on them.

Now, let’s take a step back in time to the year 1800, when paisley shawls were woven on a hand loom. These shawls are now fiercely sought after by many museums around the world for their fineness and style. As jacquard looms, considered by many as the first step in the computer manufacturing process, came into widespread use in the 1840s, the weaving trade began to die out. By the 1870s, paisley shawls had themselves become unfashionable. As early as 1872, William Cross, in his paper “Changes in the Style of Paisley Shawls”, stated, “The present generation, even of weavers, have little idea of the vast amount of thought and mechanical skill exercised by their predecessors in the trade on such inventions as the harness, the lappet wheel, the seeding frame, the parrot machine. . . If these ingenious inventions are not soon explained and clear descriptions of them not put on record, they will utterly perish from remembrance, as if they had never been.” While these items had not disappeared by 1903, Matthew Blair, in discussing Cross’ comments, wrote, “The hope expressed in the last sentence (of Cross’) has not yet been realised’ and we fear there is little probability that it can now be done with the necessary completeness.” Some progress has been made in the recovery of these extinct weaving skills, but, as predicted, most of them defy recall.

Why the side-step from engineering into costumes and textiles? The history of losing skills goes before us. We, members and employees of organisations involved in heavy engineering heritage, have a chance to prevent these invaluable trade skills from fading completely into extinction. As the few remaining keepers of these old trade skills reach the end of their working lives, we have a last opportunity to train the next generation of tradespeople to rebuild and maintain our engineering objects. As museums and preservation groups, aren’t we responsible for the preservation of historical skills instead of just trying to interpret them? This preservation may be achievable through our institutions if a secure and ongoing funding stream can be established with a salary level sufficient to entice the new tradesperson to build a career of such a highly specialised, dirty and most physically demanding of trades.

While I do not advocate the training of a member of each and every trade, there is, in my mind, a definite need for boilermakers and fitter/machinists to be trained in the skills that were the fore-runners of their trades today, and who are able to pick up the mantle of our tradesmen of yesteryear, and take part in this magic world of preservation.

My goal today was to alert those of you who were unaware of this approaching crisis, as well as motivate those of you already concerned. If we miss this fast dwindling opportunity, in ten or twenty or thirty years’ time, we too might find ourselves searching for the engineering equivalent to the weavers of the paisley shawls.