Conservation: from a Tradesman's point of view.

Colin Ogilvie
National Museum of Australia

"What is a mechanic like you doing in a place like this?"

The place: The National Museum of Australia. Large technical objects repository and laboratory, Mitchell, A.C.T.
The purpose: Under direction conserve large technical objects from the collection.
Why an older mechanic? Training and skills from a bygone era.

Younger Visitors to the Vicars Street laboratory often expressed remarks such as "We did not realise Australia kept live fossils" or "What is your accession number?" Being thick skinned it took me a couple of years to become aware of the verbal intent so now it helps to be deaf as well.

I have two stories to relate. Number One will be the Bean and number two the Crossley.

The large technology objects (LTO) collection consists of many items from clocks to cannons, cars to cranes and various powered and un-powered transport mediums. The majority contain metal contrivances from the past two centuries and those of you born in the earlier half of the last century have had the opportunity to come in contact with, work on, or work with a goodly portion of these objects. Hence "the old fart" as commonly called enters the scene.

In the beginning, some eighteen years past, the LTO storage was very basic. Objects were stored in a large, environmentally unfriendly shed where selected items were placed on a basic maintenance programme. Not much has changed in the storage department but the objects are now subject to some form of scrutiny from which a conservation programme is developed. It is at this point that the older gentleman expressing wind enters. Requested by the Senior Conservator to assist all conservators in their efforts to conserve the collection. (Yeah, she'll be right mate.)

Prior to moving into the current laboratory facility the conservation work was being performed on the floor of the environmentally unfriendly shed. The first major project was the Bean Car of Francis Birtles. This also was the first major project for the new conservator, David Thurrowgood, under whose direction I would be working. (She'll be right mate.)

Two days into the programme the Pup (David T) requests the removal of engine mechanical parts. (Yeah, no worries mate.) I begin to remove the retaining nuts by fitting a socket. Now every mechanic knows that fitting a socket to a nut will remove extraneous dirt and foreign matter. Before you can blink, there is a plastic bag and a brush catching the falling rubbish with the Pup on the end of it. Lesson One, Day Two. Check with conservator whether he/she wants the rubbish on the nuts and bolts.

Explanation: “The dirt on those nuts is a historical record of the vehicle’s trip from England to Australia.” Ding, the bell rings.

Question to conservator: “How am I going to remove and replace parts without the loss of history?”

Of course the answer was common logic “Very, very carefully.”

Dilemma: How does a very well practiced mechanic assemble an engine with historical dirt attached when normally engine assembly is done in a clean room environment? Very simple stupid. Very, very carefully. Conservation 1. Mechanics 0.

Caution now being my middle name, things proceeded at a much more reduced rate. Not because I was bludging, just being very careful. The braking system was next on the agenda, with major work having to be performed. After disassembly and long discussions it was decided to replace two dust covers. One cover was nearly non-existent and the other was missing. Made of brass plate of approximately one millimetre thick and rounded contour, it posed a machining headache. Very old technology prevailed, spun on a wooden block, and a couple of days later replicas were fitted. Lesson Two, Day Four. Slow down and do the job properly. Conservation 1. Mechanics 1.

The final drive assembly was in a terrible state due to abuse during earlier partial restoration. The decision in this instance, made after long deliberation, was to rebuild the centre as close to the original as possible. To enable this to be achieved a new crown wheel and pinion would have to be made. Suitable drawings were produced and the Pup, with old parts in hand, made a special trip to the gear cutters in Melbourne. Mechanics question: “why not send it by courier?” Answer from Conservator: “…And if the courier looses the original parts?” Lesson Three, Day fourteen. Re-evaluate values of broken or worn out parts. Conservator 2. Mechanic 1.

Many months later it is assembly time. That wonderful time when a mechanic gets to put all pre-planning and preparation into one package. Fifty years working on engineering pieces and for the first time mechanical components are to be assembled without meticulous washing, in other words bloody dirty. Just how in hell do you do it? Yeah I know, “very, very carefully”. And so it came to pass that the Bean was put together with dirt as an identified component of the vehicle and the assembly was very successful, as was the first test run.

The final test run was most pleasing as the Bean car drove into its display area at the new Acton building. Why was this so pleasing? The vehicle was presented to the Museum in 1928 in “as it finished its world trip” condition. The vehicle was functional and now some seventy odd years later it drove home.

Conservation: one hell of a big congratulations.
Mechanic: One hell of a different attitude.
Final lesson. Never assume anything, especially in haste, as false assumption breeds historical waste.

Case Two.

The Crossley presented a very different set of values. This historical vehicle, used by the Queen mother and King George whilst Duke and Duchess of York, at the opening of Old Parliament house in the late 1920s, had undergone a 1970s restoration. This restoration left many mechanical components in a condition less than satisfactory, with catastrophic failure results likely in the near future. The initial investigation required the replacement of a rear axle oil seal, a relatively easy and not very time-consuming job. Upon strip and removal it was found that many other components had suffered from lack of maintenance or amateur abuse. This promoted a detailed investigation into the complete mechanical train with a resultant " Oh God, what do we do now?"

Here we are with a beautiful historical vehicle and every mechanical component had suffered at the hands of amateurs, or from bad professional advice. Dilemma: "moth ball the object" or "make it functional". The answer from the Senior Conservator "This object was purchased as a functional object and it is the intention of conservation to keep it that way." Well you can't argue with that. Can you? So begins the story of the Crossley.

With a complete mechanical rebuild confronting the conservation staff, a plan of attack was devised. Remember the rule KISS - "Keep It Simple Stupid" - well that was the cunning plan. One assembly and one component at a time. Starting at the front, the engine was the first assembly to receive treatment. All components were removed - normal mechanical strip down - and examined for wear, abuse and originality. To our horror every component other than the crankshaft and main bearings would need some form of major treatment. Some parts were so bad that repair was impossible.

The water pump, being so badly corroded, was the first for remanufacture. Comment from the Pup: "We can make a new one of these can't we?" Never let it be said that a mechanic would walk away from a challenge. "Yeah, no worries mate". Might I add that we have no casting facilities, only a small lathe and a beautiful old milling machine. The truth of the matter was that I had no B……. idea on how we were to manufacture this very intricate component. Anyhow a billet of alloy and much swearing cursing and cunning later produced a water pump housing to which all other components would mate. The stamping on this new housing would make it clear to later investigators that the unit was made at the National Museum of Australia on a particular date and by whom. That's great! Future conservators will now be able to throw accurate rocks at the mechanic.

Remember the phrase " Old age and cunning always beats youth and exuberance"? The next component illustrates this.

The rocker shaft was of particular note as it had suffered from abuse and wear sufficiently badly enough to warrant a new shaft. Unable to purchase a new shaft, manufacture became the only solution. The selection of material came from Bholer, a steel supplier in Sydney and the Pup, under direct supervision of the mechanic, undertook the chore of manufacture. (Role reversal.) The manufacture of this rather accurate shaft required the drilling of a hole throughout the longitudinal axis, a

distance of approximately seven hundred millimetres or roughly thirty inches. To achieve this required patience and endurance as well as considerable technical dexterity. The mission was accomplished and the new shaft is now an operational component in the engine.

Question: “How do you make a conservator a tradesman?” Answer: “Start off with a dexterous conservator.”

The rebuilding of the mechanical train in this vehicle took considerable effort, time and planning. In total five hundred and sixty eight parts were made, to achieve the final goal of having a functional object which did not depart from its social history. This was an achievement for both conservation and engineering staff.

To the question “What’s a mechanic like you doing in a place like this?” the answer is “instilling old learning and skills into the future of our institutions by making our young conservators aware of engineering culture”.