

Modelling Wholestick Trucks on the Sugar Cane Railways

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Sugar cane is a tall tropical grass that yields a sweet juice and a number of other products. Cane stalks - which can reach over 4 metres in height - are cut off near the base, topped, and transported to the mill for crushing. In some countries this is still a labour intensive operation involving much stooping, hand cutting with a machete-like cane knife, then gathering and lifting armfuls of cane stalks onto the transport.

Where rail transport is used, whole stalks of cane were loaded into a variety of wagons. Some mills used high-sided open wagons but many preferred the special purpose four wheel 'wholestick' trucks introduced in NGDU #24. This article, in two parts, expands on that earlier article and provides a modelling perspective.

The earliest wholestick trucks were essentially small four wheel platforms with upright corner posts. A chain or rope was thrown over the load and cinched down to hold it in place. Some mills loaded the cane longitudinally in early years, but cane was generally cross-loaded in Australia and Fiji.

To save on shipping costs some of the wooden wholestick trucks were purchased in what was essentially kit form. The UK or European manufacturer supplied the metal fittings and the estate/mill purchaser supplied the timber and labour necessary to complete the truck. These made up into a functional truck with enough flexibility from the timber components to survive rough handling. Unfortunately for the manufacturer, they were also easy for a local blacksmith to duplicate, perhaps with steel fittings rather than iron, so repeat sales were affected. Other manufacturers provided all metal wholestick trucks, with steel soon the material of choice.

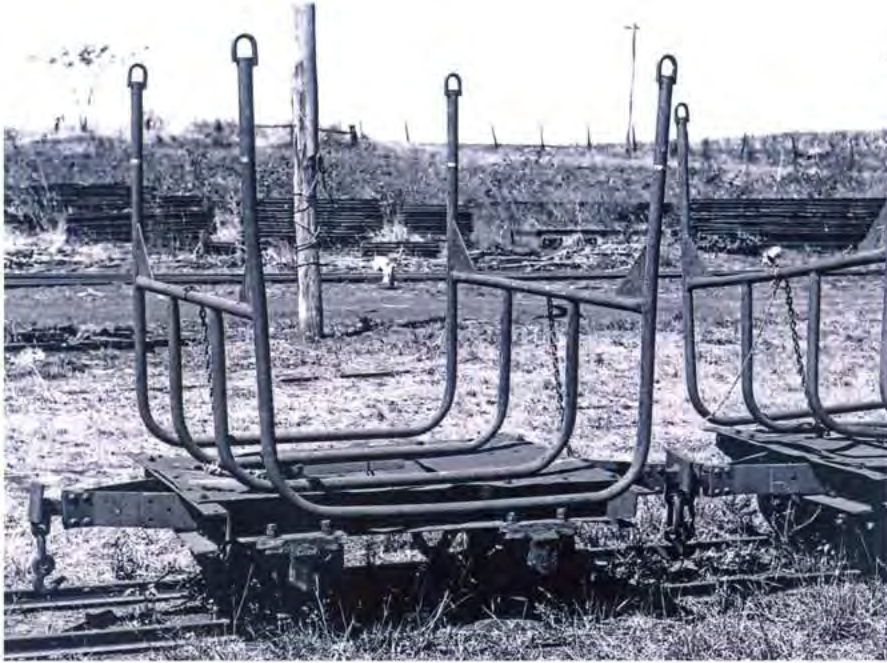
Distinctive truck designs evolved for each mill, if only to avoid infringing patents. The need for economy, availability of local materials, quality of workmanship, and the evolution of 'better mousetraps' led to a wide variety of truck styles.

Wholestick trucks were usually light enough that two men could lift an empty truck to turn over and/or rerail it. An appropriate tree branch or length of timber could similarly be used to tip a derailed loaded truck off the track when clearing the line was necessary. The frequent derailments that accompany cane transport in present day Fiji are indicative of the design's susceptibility to poor track, and its robustness.

The estate-era British-Australian Machinery Company Limited cane truck in NGDU #14 is one example of a lightweight manual or horse-drawn steel truck. My article in NGDU #24 had an illustration of a small O&K (Orenstein & Koppel) wood deck, metal underframe, plantation cane truck. The Fowler truck in John Armstrong's drawing in this issue is an example of a heavier, thus larger capacity, steel truck. Jim Fainges drawings in NGDU #24 show one wooden truck design, and Brian Millar's drawing in Part 2 of this article will present another.

In contrast, modern mechanical cutting usually produces cane billets roughly 30 cm in length. Most mechanically harvested cane billets are transported to the mill in some form of cane bin, essentially an oversize wire basket on wheels. While as modellers we are interested in those wheels being on rail, increasingly they are on motorised road transport.

TITLE PHOTO: Loading cane on a horse line ca 1900. Bundles of cane were carried on the shoulder, with ladders used to get high enough to fill the truck. State Library of Queensland Image, Sugar transport: 039924, used with permission.



ABOVE: Steel wholestick cane trucks on the scrap line at Goondi Mill, 1982. The cradle on the left has been fabricated with braced uprights, while the one on the right has angle iron bent into a 'U' shape. Greg Stephenson photographer.

ABOVE: Lightweight steel cane trucks, Isis Mill, Huxley, 8 September 1968. The loops on the uprights would have been used for unloading and were unnecessary when mills shifted to grapples or rotary dumps. John Armstrong photographer.

BELOW: Fowler steel cane truck at the Childers Museum, 2006. Although these trucks have an angle iron cradle, they are direct descendants of the tubular basket in the Huxley photo. The timber on the deck was likely added at the museum for health and safety purposes as the truck is open to public and can be climbed upon. The only time trucks such as these would likely have had a deck was when they were carrying passengers (navvies or a railfan group, for example). Lynn Zelmer photographer.

BELOW: Bundaberg Sugar wooden wholestick truck at Fairymead House, Bundaberg. The deck is open enough that it's fairly obvious this truck's structural integrity depends upon longitudinal, not diagonal, bracing. Lynn Zelmer photographer.



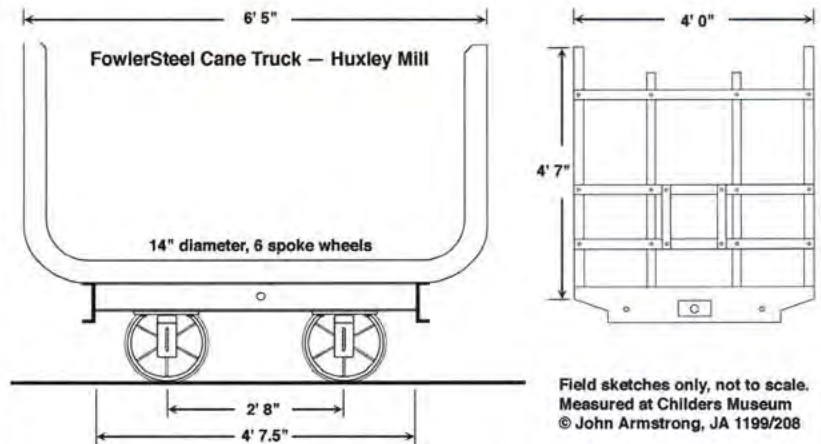
Modelling Considerations

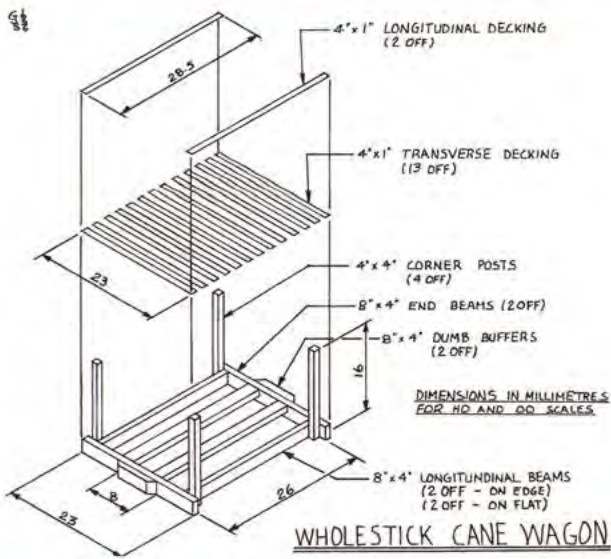
Wholestick trucks in the smaller scales are very lightweight, especially when empty. Most modellers will already have determined their modelling scale/gauge, but anyone considering modelling the wholestick era should carefully consider the choice of scale, gauge and type of cane truck.

Many Queensland modellers work in either HO_N30 (3.5mm) or O_N16.5 (7mm), although the former often also use OO9 (4mm) scale models, especially when kitbashing locomotives. HO/OO wholestick trucks require careful construction and proper weighting to operate well. I've not been successful at building a steel-type HO_N30 cane truck that can operate while empty, nor have I seen a functional model from any other modeller.

It probably doesn't matter whether you use styrene or metal (brass, most likely) as the components are so delicate that the weight difference will be minimal. As well, the need for an open underframe means that extra weight cannot be installed under the deck.

Basic dimensions for one of the Fowler steel cane trucks at the Childers Museum. John Armstrong draftsman.





ABOVE: Scratchbuilt HO_N30 wholestick trucks using styrene strips. The steel truck (left) is built as close to scale as was possible when converting from 2' to 30" gauge and the use of commercial N scale wheelsets. The wooden truck (right) is more practical; it's built around a length of brass strip to provide strength and rigidity. The biggest modelling challenge is drilling and gluing the bearing blocks so that the wheelsets are square and at the same height.

The long wheelbase is not prototypical but improves operation. A short rake of empty trucks can be pulled at slow speed around an 11" radius curve, loaded trucks can operate at a slightly faster speed in either direction. Lynn Zelmer model builder and photographer.

This isn't only a model problem - mills also had difficulty backing rakes of empty wholestick trucks on curves or through point work! Loaded trucks are a different matter as the weight can be hidden by the load.

Wooden truck designs make for easier modelling as the components are bulkier even in styrene or resin, and the timber deck can hide an underbody weight. My own best results (Modelling Cane Railways #10 and illustrated in this article) resulted from assembling the truck around a short length of flat brass strip. The brass strip kept the truck square and rigid while providing additional weight.

Greg Stephenson used a different technique (Modelling Cane Railways #23 and the illustration and photo in this article). He used Evergreen styrene strips to build his wholestick trucks on underbodies from commercial HOe wagons, thus ensuring the wheelsets were square and level. Other modellers have cast their wholestick trucks in resin using rubber moulds. It might seem reasonable and cost effective to cast couplers as an extension of the truck underframe. However, Bob Dow discovered years ago that HO_N30 bins with cast-on couplers tracked poorly and were difficult to push.

Wheelsets can be a problem for scratch-builders in any scale, since 13-15" diameter wheels are not common, especially if you want the six-spoke or curly-spoke wheels used on some trucks.

Most modellers in smaller scales ignore this difficulty for anything other than display or competition models, and select the smallest commercial wheelsets available. As a result, sugar cane models often end up being somewhat higher than is prototypical. This isn't as obvious with wholestick trucks, especially loaded trucks, as it is with cane bins that should appear to hug the ground.

The choice of couplers and coupling height can also be problematic. A knuckle coupler set at 'normal' coupling height is common for the smaller scales. This generally means N scale height and couplers for the HO/OO modeller.

Modelling wholestick cane in HO scale is relatively simple. Remove the feathered tips from the end of good quality broom straw, and cut the remainder in lengths no more than 3 scale feet longer than the width of your wholestick truck. Stack the lengths of straw on the truck and fix with a small amount of glue. Cut appropriate lengths of straw to glue around a lump of metal if adding weight. Run a piece of brown or black thread from the winch underframe and over the top of the load to the opposite end of the truck to represent a cable holding down the cane.

With the increasing availability of On30 (1/4") scale models more cane railways are being built in that scale. The second part of this article will explore wholestick trucks in the larger scales.

Acknowledgments and References

British-Australian Machinery Company, Limited (2002). *Trucks for Sugar Estates* (manual, horse or locomotive traction), in *Narrow Gauge Down Under* #14, p14.

Stephenson, Greg (2007). *HO_N30 Wholestick Truck*, *Modelling Cane Railways Handbook* #23, www.zelmeroz.com/canesig.

Zelmer, Lynn (2002). *Wholestick Cane Truck*, *Modelling Cane Railways Handbook* #10, www.zelmeroz.com/canesig.

Zelmer, Lynn (2007). *Wholestick Cane Trucks* in *Narrow Gauge Down Under* #24, pp15-17.

Additional photos, plans, dimensions and modelling details can be found on the CaneSIG web site (<http://www.zelmeroz.com/canesig>).



LEFT: The finished product! A rake of Greg Stephenson's HO_N30 cane trucks traverses his home layout.

The underbodies, taken from a variety of Minitrains, Roco, Eggerbahn, and Jouef HOe four wheeled wagons, ensure smooth operation even when being pushed. Lynn Zelmer photographer.