



This case study was written by Nigel Pye of Warwick Business School, with the kind cooperation of Mike Cooper of Cooper Bikes and Steven Bell of Pashley Cycles -
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Steeling for success? A case study of supply chains in the British bicycle industry

The bicycle industry has seen some steady trends in the last 30 years, the predominant trend being the centre of gravity of manufacturing moving inexorably eastward to Asia. With the closure of Raleigh's UK production line in 2003 there was only one large scale (>20,000 per year) UK assembler remaining (Falcon/Claud Butler) which ceased UK production in 2009. The major source of bicycle manufacture had become the Far East, especially Taiwan or Taiwanese owned factories based in Vietnam or Bangladesh.

The Taiwanese and other eastern markets have made it easier for overseas bicycle brands to do business with them by creating industry wide catalogues (more recently on-line) providing the latest supplier and product information to all buyers. They have steadily developed their expertise in bicycle component manufacturing over the past 40 years and can offer a variety of services from simply supplying specific parts through sourcing components based on price and help with R&D to shipping complete bikes, badged for their overseas customers.

Bicycle materials have developed over the same timescales. Similar to cars and car racing, so the professionalisation of bicycle racing has developed the industry. Over 30 years ago, most bicycles were made of steel. The development of aluminium frames meant lighter bicycles of similar strength. Titanium has been used in the professional peloton but now all bikes frames seen at the elite events are made of carbon fibre. Keeping up with these developments and helped by government investment, the Taiwanese have become the world experts at the mass manufacture of carbon fibre frames. Carbon fibre is also seen in some high-end components such as handlebars, cranks and even derailleurs (the components that move the chain on to different gears).

The Taiwanese have now taken the next logical step and developed their own labels to sell complete bicycle of a very high standard. For instance Giant and Merida bikes are now seen at mountain bike and road cycling world championships. Merida sells over 2 million bikes per year.

More recently there has been a rekindling of interest in steel frames as tubing manufacturers such as Reynolds and Columbus have developed new techniques that produce lighter tubes of equivalent strength. The steel frames are less rigid than those made from carbon and can be of comparable weight. While there are artisan steel frame makers in the UK (e.g. Feather Cycles), there are only a handful of mid-volume manufacturers (500 - 20,000 per year) fabricating steel bikes in the UK. This is insufficient volume to justify a mass production bicycle facility in the UK, so consider the approaches chosen by Cooper Bikes and by Pashley Cycles.

Cooper Bikes



The market

Utilising the engineering and technical know how that has been synonymous with the Cooper Car Company for 50 years, Cooper Bikes, the bicycle division of the company, launched their new range in 2009. Mike Cooper commented: "The Cooper Car Company has always had a passion for bicycles and we have been thinking about diversifying the business for a while. We wanted to turn our engineering know how to making bicycles that offer the best possible components for the best possible price."

Cooper wanted to leverage the appeal of the Cooper brand from the heritage of John Cooper's racing days through the original Mini Cooper to the John Cooper Works partnership with BMW. Their designs feature a strong British image by using British brands such as Reynolds tubing, Brooks saddles and Sturmey-Archer chainsets: all well known names in the bicycle world. They produce 14 different models each with a choice of frame sizes.

The Supply Chain

Cooper design the range of bikes and specify the materials and components from their London base. With the exception of Brompton, who make fold up city bikes which are manufactured in the UK using a mix of UK and non-EU parts, the bicycle industry in the UK is mostly artisan based. Given the right quality & price Cooper Bikes would prefer to have their bikes built in the UK. but there is insufficient volume to finance large scale bike manufacturing in UK. By contrast, the recognised centre of mass bike building, Taiwan, exports over 4.5 million bicycles every year.

In order to manage their operations effectively, Cooper engaged an agent to source the completed bike, the outline supply chain is shown in Figure 1. The agent, Action Trading International Ltd (ATI),

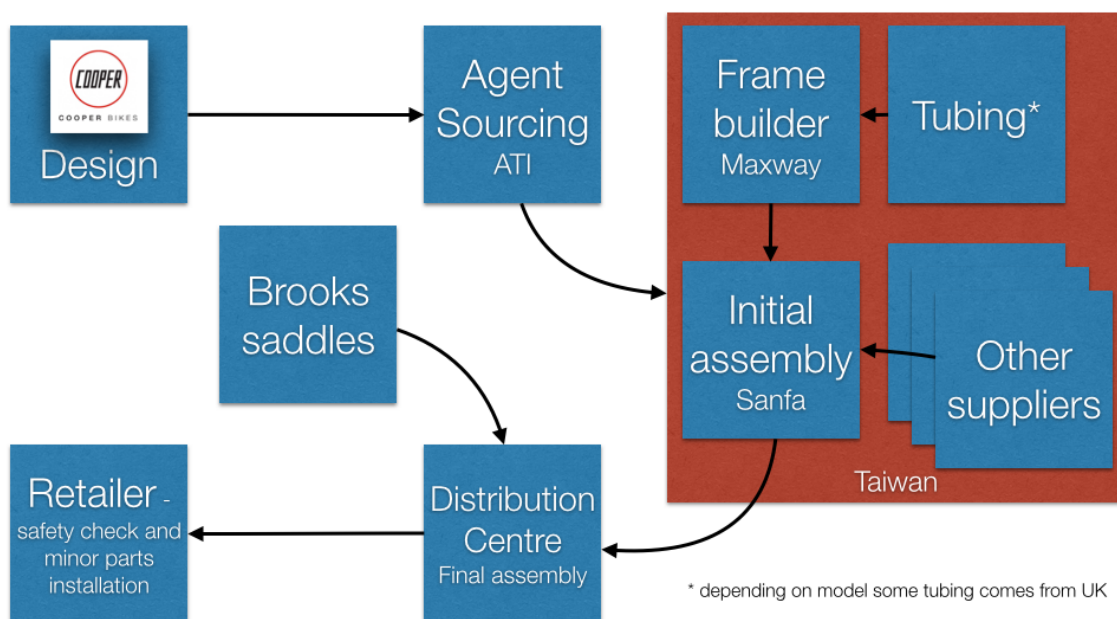


Figure 1 - Illustrative Cooper Bikes supply chain

initially sought a frame builder and checked them for quality control including sending samples to Cooper for approval. Once the frame builder (Maxway) was approved, ATI went out to tender for a bike assembler who would receive the frame from Maxway and build the complete bike ready for shipping to Cooper's Distribution Centre (DC). Again completed samples were sent to Cooper for approval. These samples, once approved, were used to attain orders from retailers. Based on retailer orders, Cooper order about 2,000 bikes a year from ATI. ATI manage the procurement and ordering of the parts which are delivered to Sanfa, the chosen assembler. Reynolds 520 tubing is made under licence in Taiwan, but other more advanced Reynolds tubing is sourced from the UK. Sturmey-Archer, was originally a UK brand, but the parts are now made in Taiwan. ATI arrange for the assembled bikes to be delivered to the DC.

Cooper's DC is based in Munich and is run by Cooper Distribution GmbH, a firm that Cooper Bikes co-own with a German partner. Cooper's main markets are UK, Poland, Germany, Austria, Belgium, and Netherlands. At this point the bikes do not have saddles, and the brake levers and bar tape are not fitted, nor are the cable clamps that clip the rear brake cable to the top tube.

The Brooks Saddles are sent to the Munich DC for fitting. If the saddles were sent to Taiwan, they would attract a Taiwanese import tax and since the finished bike attracts a value based import tax into the EU, this tax would be greater if the saddles were fitted. There is no tax for moving the saddles within the EU. In addition to the postponed fitting of the saddles the DC fits the brakes. In the UK the front-brake lever is usually on the right, in the rest of Europe it is usually on the left. Since the cables for the levers run under the bar-tape, this too has to be fitted once the final destination of the bike is known. The rear-brake cable clips are fitted at the retailer when the bike is put on display. This gives the paint on the frame the maximum drying time and so reduces the potential for damage to the paint. This is particularly important for these steel frames as they may be liable to rust were the paint damaged.



Figure 2 - Cooper Bikes Touring Bike

The author is grateful for the cooperation of Cooper Bikes in the production of this case study.

Pashley Cycles



The market

Pashley was founded in 1926 in Stratford-Upon-Avon and they produce about 12,000 hand-made, classic, steel bikes per year. They do not refer to themselves as heritage since they see their bikes as modern machines using classic styling. Although they have 28 main models, with various options they have 160 variants.

Pashley produce about 12,000 bikes a year and their production over the year is fairly flat with little more than 10% monthly variation. They have two distinct styles of bike; those aimed at the leisure cyclist (22 models) and work bikes (6 models) aimed at business users (e.g. their famous Mailstar used by many postal workers around the world - Figure 3). Forty percent of Pashley's output goes to export to around 50 countries. A third of their output is work bikes, mostly in the UK market, but exports are increasing.

The work bike is seen as a key area for growth for Pashley. Their experience and reputation in the area of 'delivery vehicles' has highlighted the opportunity to concentrate on 'the last mile'. That last element of delivery of physical objects such as mail and parcels. The hub and van approach is becoming less appealing in cities where for reasons of congestion and security, vans cannot be left outside office blocks.



Figure 3 - Pashley Mailstar

The Supply Chain

The Pashley brand is firmly centred on being quintessentially English. This heavily influences their approach to sourcing; preferring to source from West Midlands, UK, Europe and Taiwan in that order. In all they have about 120 suppliers, 11% of whom are outside the UK. Their top supplier is Sturmey-Archer who make wheel hubs, cranks, chain rings and other moving parts. Sturmey-Archer is a British label with a long history in cycling, but their parts are made now exclusively in Taiwan. Pashley buy them through the Sturmey-Archer subsidiary in Netherlands. Wicker baskets are sourced from Devon, though much of the willow that goes into them is now sourced from Europe. Pashley's top 10 suppliers by value provide 50% of their supplies.

Factory finished stock is kept at one to two week's production. Lead time for a retailer is typically four weeks; six weeks for a trike. It is of note that should all processes be aligned and all the relevant assets and people available a bike could be made in under three hours. Forty minutes to weld the frame, eighty minutes to apply the powder coat and bake in the ovens and forty minutes to add all the components to the frame.

Distribution of bikes is carried out from the factory by a third party provider. The senior management of the firm use their extensive contacts in the UK and around the world to identify markets and retailers. They work with retailers in the UK to identify territories and they have a 'Gold Dealer' scheme that supports promotional activities and special offers. Unlike most bicycle manufacturers, bikes are distributed complete, apart from the handlebars needing to be turned through 90 degrees. This means larger packing cases and hence greater transport costs, but it is popular with the retailers and it keeps Pashley more in control of the quality of their product, see Figure 4.

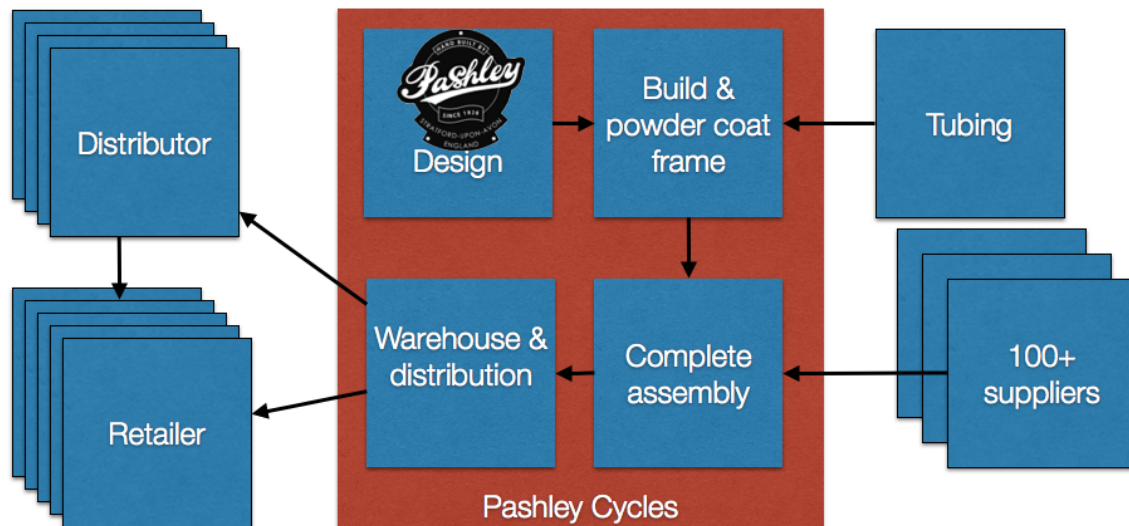


Figure 4 - Illustrative Pashley Cycles supply chain

A few suppliers provide vendor managed inventory (VMI). Some of these are very local suppliers who can simply call in to the factory with supplies and top up as required, others, such as steel companies, are connected via Pashley's S&OP planning systems.

Supplier Relationships

Pashley meet many of their suppliers on a monthly or even weekly basis. In part this is simply because they are local but also because they are working with them on quality and new product development. In addition to a capability audit, Pashley carry out an ethical audit on their UK and European suppliers themselves and require suppliers further afield to submit to a Sedex¹ audit.

Pashley own a lot of the tooling used by their suppliers. For instance their mudguard supplier, based in Shropshire, uses Pashley owned tooling. It is important that good relationships are maintained with such suppliers to ensure a return on their investments.

Pashley are working on a new variant of their Mailstar bike. It is an example of their approach to sourcing that the design of the new, strengthened bike was not based on simply going back to the drawing board, but rather on improving the extant processes with their Midlands supplier. By working

¹ Sedex, the Supplier Ethical Data Exchange, is a not for profit membership organisation dedicated to driving improvements in responsible and ethical business practices in global supply chains - See more at: <http://www.sedexglobal.com/>

with this supplier they were able to produce an improved component for the same cost; although it had more steel in it, they were able to use less operations to produce it.

Pashley's preferred wheel rim manufacturer has moved production to Belgium. Pashley value the relationship, so they still source their rims and have them sent to their Birmingham wheel builder where they also have Sturmey-Archer hubs sent. The wheel builder produces the spokes and builds the wheels.

On the rare occasion when they might seek to replace, or find a new supplier, it is unlikely that Pashley will go out to open tender. They describe the industry as a 'global village' where everyone knows everyone else. The industry has also been described as 'very clubby' and the politics of moving suppliers can be tricky since many owners and directors are involved on multiple boards. It is therefore heavily relationship dependent.



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Figure 5 - Pashley Clubman

The author is grateful for the cooperation of Pashley Cycles in the production of this case study.