



Modern computer nesting systems are helping shoe manufacturers to achieve ever better use of their upper leather. However, the concept of a maximum yield cutting system is by no means new and the men who traditionally achieved this by hand were amongst the most skilled that the industry has ever seen.

Skills of the hand clicker

The leather used for footwear uppers has always been a critical factor in its appearance and performance. It has also always been its single most expensive material component. It is therefore little wonder that so much emphasis has been placed on the skills of the people who have traditionally selected this valuable commodity and on those who have cut the individual components needed to produce the final upper.

It was not until the mass production revolution of the late 19th Century that any real effort was made to search for the ultimate yield when cutting upper leather. The traditional shoemaker was

a craftsman of many parts and only the introduction of the factory system allowed the degree of specialisation that could make this possible.

The key individuals in this equation were the 'clickers' who cut the material by hand and were responsible for the best use of the material put before them, in terms of both economy and performance. It is therefore no surprise that they were the highest paid employees in the factory and considered themselves to be the aristocrats of the industry.

A CLICKER'S SKILLS WERE MANY

To begin with, he had to understand the nature of the leather he was cutting. This would vary enormously between its type and tannage, the differing tensile and stretch factors involved, the quality of the shoe to be cut and, not least, the most effective way to interlock the patterns he was required to cut. To become a top grade clicker therefore required both a good analytical brain and considerable time spent in learning all of the necessary skills.

Suitable boys would first be set to cutting fabric linings, where they would be taught the difference between warp (length) and weft (cross) strengths and stretch, and the basics of pattern lock. If they passed this stage, they would progress as young men to cutting leather linings, where they began to learn the basic properties of leather while still working on less expensive materials. During these stages of apprenticeship they would also acquire the vital skill of shaping and sharpening the blades of their knives in order to cope with different materials. ➤

The clicker's tools



A CLICKER'S TOOLS WERE SIMPLE

While the clicker's tools were indeed basic, they also required careful maintenance. For instance, the board on which he cut was made from small square blocks of wood placed on end and bound together with a wood surround. This was scraped flat and soaked with boiled linseed oil which caused the wood to expand and provide a smooth surface that would allow the point of the knife to penetrate but still be accurately guided around curves. The clicker would then have to regularly scrape, oil, and reverse his board in order to maintain the best cutting surface.

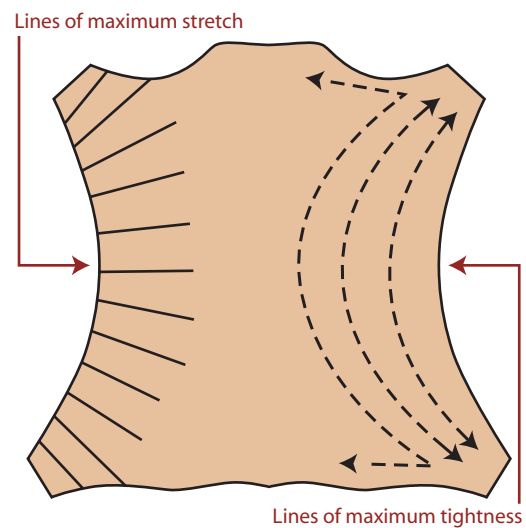
The shape of a hand-clicking knife blade was as crucial to clean and accurate cutting as maintaining a sharp edge. When cutting thick, firm leather a curved blade was required so that the strength applied caused the blade to cut as close to a vertical angle as possible and thus achieve a clean edge. If the material was light and soft, a fairly straight blade was used so that more pressure was applied down on to the leather to hold it to the board. A curved blade could cause the leather to 'snag' and so produce a rough edge. To keep his blades in condition, a clicker employed an emery board, which was a flat strip of wood with abrasive paper on one side and greased leather on the other. The name 'clicker' derives from the slight clicking sound the knife makes at the end of each cutting stroke.

BASIC DESIGNS

One advantage that clickers had during much of the 20th Century was that the number of upper designs they were called upon to cut for mass-produced footwear was relatively limited and this is the major difference with today. Ladies' styles were usually simple three-quarter cut pumps or bar shoes which also included heel covers that made it possible to cut deeper into bellies and shanks. Men's styles were mostly traditional Oxford or Derby boots and shoes. Cutting systems had long been developed for all these to provide a basic format which the clicker could follow.

A good example is the men's Oxford, named after a shoe produced in England for Oxford College choir boys during the 17th Century. The design fits the foot well and also makes maximum use of the leather in terms of yield thanks to the

Figure 1: Lines of stretch and tightness



shape of the sections and the way in which they can be locked together. The shapes also involve few straight lines and sharp corners, so the clicker's knife typically uses only two strokes per shape, making it both faster and cheaper to cut.

To see how the system for an Oxford worked, it is necessary to look at the directions of stretch for most types of leather (*Figure 1*). An animal's skin must stretch in order for it to be able to move, therefore one must expect this to be greatest around the neck, belly and legs. The right-hand lines show the greatest resistance to stretch and those on the left the least. The butt should show little difference.

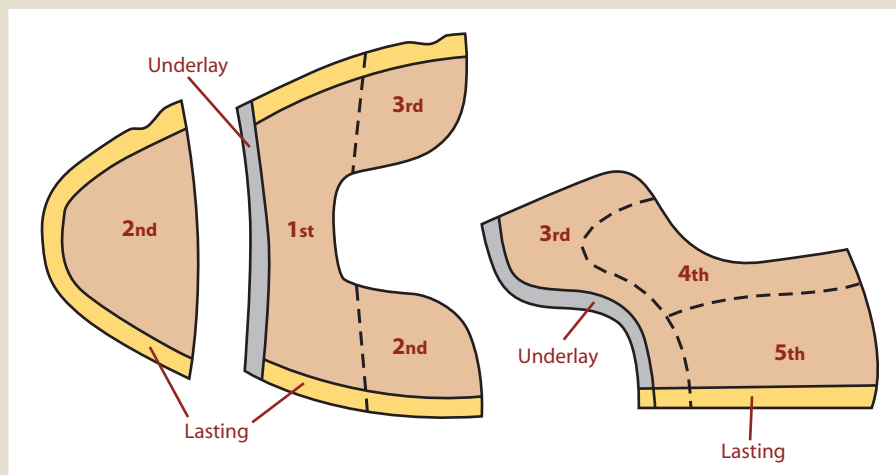
UNDERSTANDING THE MATERIAL

Variations in every skin meant that the clicker had to decide for himself where to place his patterns, so he had to understand both the likely effect of these variations and any blemishes, as well as how each upper section was expected to perform (*Figure 2*).

In simple terms, the best material needed to be at the front of the shoe where it would be seen, with a progressive reduction in quality towards the back and the inside. While this appears totally logical, we must not forget that he had to think about all of this as well as directional stretch and economy, while at the same time only being paid for the number of pairs he was able to cut in a day.

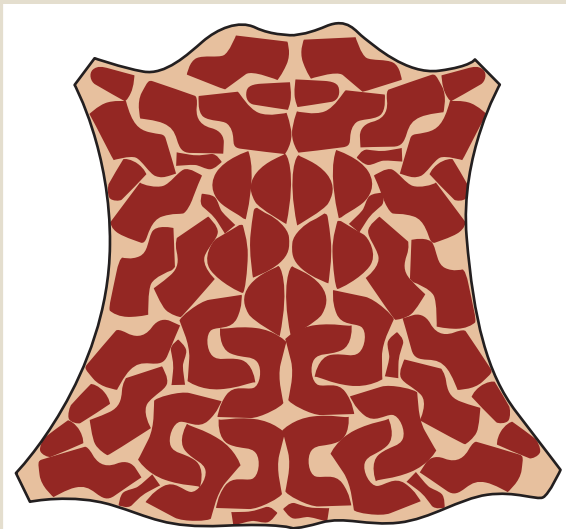
Figure 3 shows how the vamps and toecaps were made to fit within the butt and shoulder. The vamps closest to the tail are placed

Figure 2: Quality selection



so that the inside wing is nearest to the edge. The belly and neck do not allow a proper system for the quarters, so they are cut

Figure 3: Optimum Oxford system



tightly toe to heel with the best leather closest to the vamp seam. As tongues and backstraps were used to clear almost everything else, there was not much waste from a good clicker. This was just as well, as the old saying was that "If you did not make the leather pay, you would never make the factory pay".

J.H. Thornton in his 'Textbook of Footwear Manufacture' published in the 1950s, shows data that suggests a men's size 8 Oxford cut from an average 10 sq.ft., grade two calfskin would take 2.06 sq.ft. Would a modern computer nesting system do any better? Probably not if compared to a top grade hand clicker. But, then again, it would be faster and would not require anything like the degree of skill, experience or sheer effort he had to apply.

The world has moved on and while some will feel sad at the loss of traditional skills, the introduction of modern technology has enabled good quality footwear to be manufactured almost anywhere, both to a consistent quality and at affordable prices. Those of us able to remember the old hand clickers will always hold them in the highest regard for not only were they among the most skilled of men, they also had to work extremely hard for their money. 🌐

Photo images courtesy of Church & Company (Footwear) Ltd., diagrams courtesy of the family of J.H. Thornton, M.A., F.B.S.I.

TEST METHODS IN BRIEF **NUMBER 11**

Colour fastness of leather to water spotting

EN ISO 15700 / IUF 420

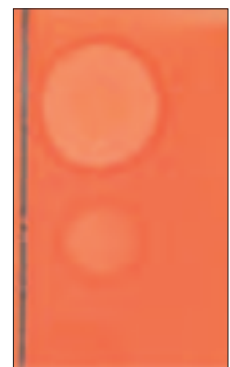
The colour fastness of leather to water spotting is the resistance to the action of water drops on dyed leather surfaces.

Method

A sample of leather has 2 water drops placed on the surface. One drop is dried after 30 minutes with absorbent paper and the other left for 16 hours.

The change of colour of the leather is evaluated using the change of colour Grey Scale.

Any other changes to the leather surface should be noted. 🌐



Additional Information

Guidance for sources of equipment and materials are given in the Standards.

ISO and EN Standards are copyrighted documents that are available worldwide from the local Standard Organisation in each country (address/details see website: <http://www.iso.ch/iso/en/prods-services/ISOstore/memberstores.html>).

Sets of IU test methods are available from the SLTC in the United Kingdom.

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