PACKAGING BOWS FOR TRANSPORTATION

BENOÎT ROLLAND'S method for securely shipping bows follows the laws of physics, as he explains

A basic truth about transportation accidents: if it's knocked hard, it hurts. This is why cars have airbags. Yet most bow cases do not provide enough cushioned space around the bow, though their sides may be velvety and soft to touch. Nor are they designed for shipping: such boxes may slip from the hands and hit the ground, or be stacked and squeezed. Therefore, I have devised my own packaging with three guidelines: lightness, strength and a flexible inner component. It can also be easily reproduced and reused by makers and musicians.

Toddlers often play hide and seek by covering their face with their hands, incorrectly believing that they can't be seen. Likewise, an encased bow remains at great risk of breakage despite being out of sight and secured to some extent by a hard shell. The tough material (the tube or case) protects the bow from compression, but not from shocks.

Physics can explain this. When a bow drops, it strikes the ground with great velocity, and the combination of velocity and mass (the weight of the bow and the packaging material) produces kinetic energy that has to be absorbed by the most flexible material in play. But here is where most knowledge is inaccurate: the kinetic energy is not absorbed by the first piece of material around the impact zone (the packaging); rather, it is transmitted through all rigid materials until it reaches a soft, flexible element able to absorb the shock waves. Also, the ground does not deform; the energy lost when the bow's velocity drops from its initial speed to zero is absorbed by what is inside the box (the bow). This puts sudden pressure on the weakest point (the bow head). Inside a hard case, the impact is worse: the bigger mass of the case plus the bow increases the fatal kinetic energy sent towards the bow.

This is why I package light and install around the bow a flexible material that will, in the case of shock, deform and absorb the energy prior to it reaching the bow, thus increasing the chances of it surviving the damage.

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The bow is placed in a strong plastic bag

The PVC tube that will be used to encase the bow

[1] First, I insert the bow into a smooth, fitted plastic bag to protect the varnish from marks and scratches. The bag should be of a strong and slick plastic that neither wrinkles nor sticks.

[2] Next, I choose a strong tube – and matching end caps – that can provide a hard outer shell for the plastic-sheathed bow. This will protect the bow from being smashed if it is put under pressure. The inside length of the tube should be at least eight inches longer than the bow and should have two open ends. In the example pictured I use a PVC tube. This inexpensive item is readily available in the plumbing department of any hardware store, as are caps. A strong cardboard tube that is lighter might be even better but its resistance must be carefully checked [how?].

Gluing a cap to the tube avoids confusion at opening

[3] Normally the cap is well fitted to the tube, but it is a good precaution to add some glue to ensure that it doesn't come off. This also avoids any confusion at opening.

Foam is slotted in at each end of the tube

[4] I then insert 10cm-long pieces of foam at the bottom and top of the tube from the unglued end. I usually use the same soft-grade foam found in ordinary mattresses or sofas; it can be bought from fabric stores. The two ends of the bow rest against this foam which also provides a partial support for maintaining the bow in the middle of the tube. Effectively, I am using a mix of air and foam – the elastic material – to absorb potential shocks.

The bow is centred in the tube and immobilised

[5] By slightly pushing the tip of the bow into the core of the foam piece I immobilise the bow, now centred in the tube along its entire length and almost freely suspended.

Providing extra security with bubble wrap

[6] If necessary, an additional ring of bubble wrap plastic at the middle and the ends of the bow can keep the stick in place while it floats in the centre of the tube. I do not want anything to ▹ move or rattle.

Closing the second end of the tube securely

The outer package is a triangular box

[7] I now securely close the second end of the tube – but without glue. [can you add more text here?]

[8] This first package – the inner tube – is then inserted into a second one. The same principles apply a second time to combine resilience and flexibility.

This time I like to use a long triangular box: it does not roll when dropped – it will not glide toward the middle of a street and under a car or down some stairs. In addition, the three spine edges give additional strength to the structure. Shipping companies usually provide such boxes.

Bubble wrap at both ends of the box provides extra security

[9] I stuff the bottom of the box with bundles of bubble wrap and also put some around the inner tube, once again, to immobilise it in the centre of the box as it sits surrounded with air bubbles.

After the box is topped with more bubble wrap, I carefully close it, and tape both ends and all seams. Having applied the traditional 'fragile' and 'musical instrument' labels, I ship the box preferably overnight, avoiding any weekend layover. Using a fast carrier minimises stacking time and manipulation during shipping, and avoids too many temperature and hygrometric changes in trucks and warehouses. I monitor the package's trip over the internet.

Shipping as safely as we can preserves the valuable but fragile heritage of rare historical bows as well as great contemporary bows. Bows break in too great a number, particularly during transportation. Reversing this trend may also help keep insurance costs under control. ■

NEXT MONTH >> Adele Beardsmore reveals her recipe for varnish with stable colouring