

Tomoko Azumi meets step stools



Nested tables designed by Tomoko Azumi for Japanese furniture manufacturer nextmaruni.



Sandy Marshall, photographed for an interview in *The Guardian* newspaper.

### step stools

Sandy Marshall is 4 feet 2 inches tall, the result of a restricted growth condition called *achondroplasia*. “The world is not made for someone like me. You need imagination to get over the hurdles” she says,<sup>1</sup> describing visiting friends and not being able to reach the doorbell. In lifts or elevators she sometimes has to ride up as far as the highest button she can reach, then walk the remaining flights of stairs.

People with restricted growth often have their own homes made accessible to them, with light switches, door handles and cupboards that they can comfortably reach, but outside in a world designed for people of normal stature, things can often be inaccessible.

So when Roger Orpwood and Jill Jepsom at the Bath Institute of Medical Engineering conducted a survey of unmet needs amongst people with restricted growth, one of the highest priorities was a step stool: something that could be carried around anywhere its owner went, and occasionally used to stand on to increase their effective stature.

At first sight, this is a classic mechanical engineering and ergonomics design brief: a step stool must be strong and stable when deployed because some people with restricted growth, despite their height, may not be of such restricted weight. Yet it also should be lightweight to be carried easily, and probably needs to fold in some way so that it is not too bulky when not in use, implying some kind of mechanism. This is a brief in which, as is often the case with products for people with disabilities, the technical issues can all too easily dominate.

But this is not just an engineering challenge: when its owner is carrying it around, the step stool will be noticed by people they meet and will form part of the initial impression they form, as would a briefcase, a handbag or an item of clothing. Orpwood says that beyond the obviousness of their disability, people with restricted growth are sensitive to the



Table=Chest by Tomoko Azumi, her degree show piece at the Royal College of Art.

things around them and do not want to be stigmatized by assistive devices. This is especially true of a product like a step stool that would be carried around and used in public.

Michael Shamash, like Sandy, has restricted growth and works for the Restricted Growth Association. He is passionate about design, and when faced with the same problem found himself in a fashionable London furniture store buying “an expensive and designerly” set of steps, which he describes as being attractive but not ideal for the purpose, because they were not designed with restricted growth in mind.

This is not surprising, since the design brief for a step stool is rather different from that for a set of occasional domestic steps. For one thing, a step stool will need to be carried around a lot more, rather than left propped against a wall. More importantly, it will be used in public, so its appearance when folded, how it unfolds and how its owner looks standing on it will inevitably become part of their projected image and identity. What different ideas might result if a step stool were approached from these more social and emotional perspectives?

### Tomoko Azumi

When considering this change in perspective, the furniture and product designer Tomoko Azumi springs to mind. Her background was in environmental design, but she moved away from architecture towards furniture preferring to work with “things that are in human scale, things that you can touch”.<sup>2</sup>

Azumi then studied furniture design at the Royal College of Art, where her degree project, *Table=Chest*, was a three drawer chest that transformed into a low table. *Table=Chest* wears its ingenuity so lightly: as a chest it is quietly and beautifully resolved; as a table also. In other hands, such a brief could have become so much more of a technical *tour de force*, an exercise in mechanism design. The forms of the table



Detail of nested tables for Japanese furniture manufacturer nextmaruni.

and chest are each inspired by their transformation, but not dominated by it. Yet there is an understated delight in the unexpected transformation.

This emphasis on transformation and interactivity has remained a theme in Azumi's work. One of her favorite pieces of her own work is the *Overture* screen, manufactured by Lapalma, that rolls up into a tube for transportation. With her former design partner Shin Azumi, Tomoko Azumi created furniture for Isokon, crockery for Muji and homewares for Authentics.

More recently, her own studio's<sup>3</sup> work has included nested tables for the Japanese manufacturer Maruni. Her work is characterized by its simplicity, but Azumi denies that it is minimalist: there is always a warmth, and often humor, more or less overt. It's tempting to say that the pieces have a *personality*. Her diverse work has been described in terms such as "minimalist yet sensual pieces that invite interaction."<sup>4</sup>

Her studio is evidence of her particular working technique. There are dozens of miniature models of concepts for furniture. Through these models, the ideas and details are explored and resolved in three dimensions. She may sketch her very first ideas, but moves to models and prototypes early on. When redesigning the classic *Donkey* bookcase for Isokon, they presented 30 or more *maquettes* to unfold their thought process in front of the client, by way of a performance.<sup>2</sup>

On a day that I visit, a full-size production prototype of a coat-stand is being discussed: the wooden pieces interlock in an ingenious but simple way, with the details of the joints clearly on display and part of the visual design. But there is a problem with the steam-bent wood opening up at these joints. On the prototype, these have been wrapped with string to hold them together and Azumi is discussing alternatives with the manufacturer and her design team. The devil is always in the detail.

### when Tomoko Azumi meets step stools

As with many of the designers I have approached, Azumi was at pains to emphasize how under-qualified she was and how little she knew about disability and medical engineering. Yet our early conversation touched on some experiences that Azumi herself had had when she first arrived in London, finding herself shorter relative to the British population than in her native Tokyo. She'd used bathrooms with mirrors that were mounted too high on the wall for her to be able to see herself; cupboards that were too high to reach. Not to imply that this would qualify Azumi to design a step stool without the direct participation of people with restricted growth, but this source of empathy inspires her to design sympathetically and appropriately for them.

In an inspiring and meandering conversation, we found ourselves talking about some sort of analogy with musicians carrying their instruments in cases: the image of a musician struggling to carry a large instrument onto public transport, on a bus or a train. A 'cello case is certainly conspicuous and functionally inconvenient, yet somehow never stigmatizing. This man-made object seems a natural extension of its owner's character and whilst much of this intimacy comes from the activity of playing music, and the cultural value of this, nevertheless Azumi sees inspiration to be gained from it.

With this vision of musical instrument cases in mind, Azumi photographed young people walking around the city with their backpacks, noticing that these bags weren't necessarily particularly small, but their soft materials and rounded forms lent them a friendly appearance. She became intrigued by a step stool that might not fold up at all, making it simpler but larger to carry around. Although a larger object may be more conspicuous, perhaps a soft rather than mechanical appearance could nonetheless render it less stigmatizing?

This epitomizes the contribution that designers could make to disability, bringing not only their skills but also the

idiosyncrasies of their trains of thought. Breaking new ground demands new perspectives, and sometimes this comes from challenging the assumptions written into the brief itself. In this case size, for example, is not an absolute requirement, but a means to the ends of creating a convenience and non-stigmatizing product. Good solutions to these higher issues may not necessarily be the smallest designs.

### a little cough and a little lift

Azumi's work often involves what she terms *the enjoyment of transformation* and so her thoughts return to folding step stools as she considers the particular needs of this brief and these people.

Azumi identifies two roles that the design of any folding mechanism on a step stool will inevitably serve. Both are hardly the criteria that would appear on a technical specification for a hinge, and illustrate a broader, more emotional and social perspective, not just to the design as a whole, but even to details that would not normally be thought of in this way.

The first role she calls *a little cough*. Consider the situation in which a person with restricted growth is in a public environment, for example in a bar. If they wish to approach the bar to order a round of drinks, a step stool can help put them at a height where the bartender can see them and they can catch the bartender's eye. But if the bar is crowded, setting up the step stool requires a bit of space to do this in. The act of unfolding the steps can itself play a role in this negotiation. It becomes a little announcement to those around, even a performance - a perspective that echoes Azumi's interest and previous involvement with theatre. And with any announcement, *tone of voice* is important. If the act is too discreet, it may go unnoticed; if too disturbing, it may have everyone in the room staring, and leave the person feeling stigmatized by the step stool. The mechanical design will, deliberately or inadvertently, determine this tone of voice.



Maquettes on a bookshelf in Tomoko Azumi's studio.

The second role Azumi calls *a little lift*. The person with restricted growth would obviously rather not have to carry around a step stool at all. However it is designed, this will be an inconvenience - one that the user could come to resent whatever its occasional benefits. So the moment they go to the additional trouble of unfolding it, the way this happens should be rewarding. Each time, it should give them a small emotional as well as a physical lift. Not in a loud way, not to attract attention as before, but for the satisfaction of the owner alone.

This ability to raise a smile is a quality of many of the designs featured in this book. Muji's CD player induces a smile whenever you tug on its cord. This is not unrelated to the attention that goes into the detailing of clothing, details like the inside of the collar which the wearer sees when they put the clothes on in the morning, even if no-one else can see them when they are being worn. It's another aspect of attention to detail, of acknowledging that rarely is any aspect of a design a purely technical or even ergonomic consideration. Our emotions are affected by the minutiae of our interactions both with the designed world and with each other.

Azumi starts to explore these themes through maquettes...

Overleaf, Tomoko Azumi explores unfolding a step stool in a crowded bar.



At a crowded bar in a pub...  
 you can't appeal to a pub assistant!  
 But you need a little encouragement to get attention

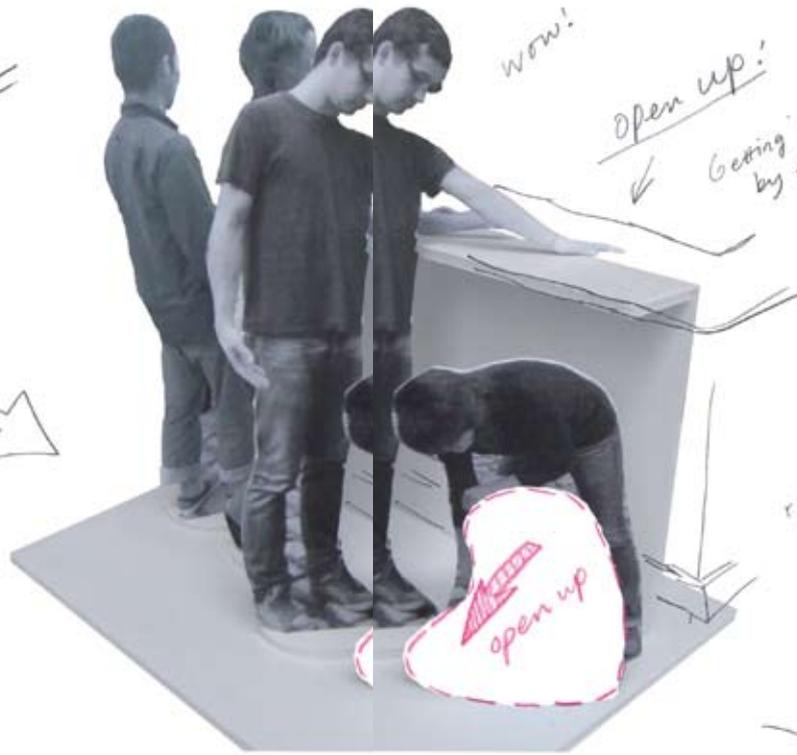
大勢の状況  
 注意を引くのが難しい  
 何か必要

a little cough



space made!

space is made  
 it is visible



wow!

open up!

Getting pleasant attention by elegant movement

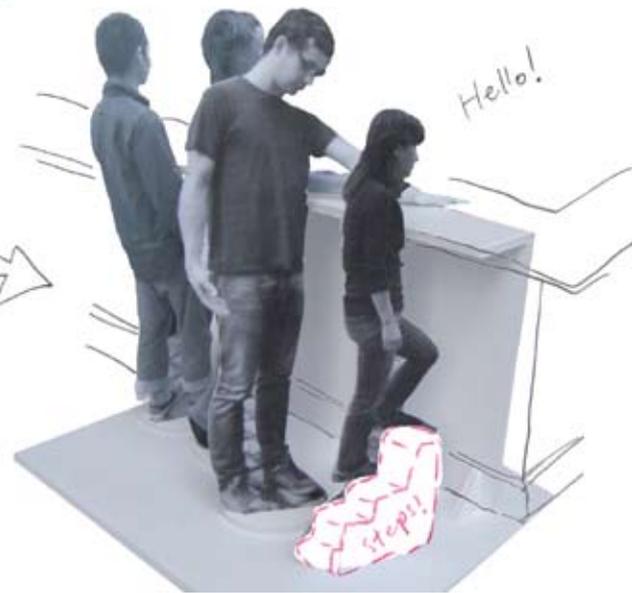
almost like an entertainment  
 this is important to lift your mind a bit, reduce hesitation of getting attention

a little lift

「注意を引くための動作」の心理的負担を軽減する。

subtle opening action creates a little space for you, you, too

「空-を-開-け-る」は言-い-易-い-が-見-え-難-い  
 非-常-に-空-間-の-向-が-視-覚-化-し-て-く-る。



Hello!

steps!