

The Glass Bathyscaphe looks at how our modern world is built on a fragile foundation of glass, and looks at differences between how Eastern and Western cultures made use of glass objects.

In Chapter 8 on [spectacles and predicaments](#), the authors start with the acknowledgement that 'many people' reach their 'peak of knowledge' at an age when 'they find it impossible to continue reading without glasses.' (p. 144). They then go on to explore why from the 14th century spectacles were increasingly seen on European faces but not Asians'. They suggest that one reason spectacles were not adopted by Asian cultures in the same way they were in the West was that Eastern civilisations suffered more from distance blurring rather than near. Arguing that this more a problem for the powerless class of children whereas presbyopia causes a problem to the older generation; those who have power, wealth and skills.

Using Otto Rasmussen and Patrick Trevor-Roper as their main sources they say that 65% of the Chinese population are myopic and have had high levels of myopia for centuries: as compared to 20% in England. They go on to point out that the Chinese did use glass containers, mirrors and magnifiers; they used crystals for treating eye disease and wore polished lenses to protect their eyes: but apparently did not use curved glass lenses as spectacles. In the West convex curved lenses had been used to make near vision clearer since the 14th century and concave lenses to correct myopia since the 16th century.

Various potential causes for myopia, such as of genetics, environment, education and nutrition are considered, returning to the circular argument that predisposition to myopia is exacerbated by prolonged intricate close tasks which causes further myopic progression. Unfortunately the validity of their argument is let down by asserting that children outgrow myopia *as with age the retina stretches*. However myopia results from the eyeball lengthening which causes the retina to stretch.

No-one grows out of an enlarged eyeball; an eye that is myopic during adolescent will always be short sighted. However the onset of presbyopia (fuzzy near vision due to loss of accommodative effort) does mean effectively that someone with enlarged eyeballs *does not need* to make so much accommodative effort and so continues to be able to see clearly at near. It is worth remembering that reading specs don't magnify: they place the near image at a distance where the eye can see without too much accommodative effort.

According to current research into myopia whilst genetics probably do have a role to play in the potential for an eye to become myopic the key phrase used by the authors is '**long hours poring over texts ... in poorly illuminated classrooms**'. It is not thought to be the studying itself that triggers the myopic shift but in sufficient time in sunlight.

Having established that myopia was the visual problem in Eastern countries the authors argue that they turned this to their advantage. Their culture evolved to overcome any trials or tribulations of poor distance vision. Poor distance vision was offset by better near vision which assisted the development of fine detailed works of art, fine calligraphy and influenced their societies etiquette e.g. the necessity for the presentation of name cards to indicate identity.

Macfarlane and Martin assert that without glass the world would be a very different place. In considering how we see our world they point out that in Eastern culture, at least until the nineteenth century, clear near sight was more important than distance vision. Whilst in the West glass was used to examine the natural world both in small detail and the world at large. As Otter

later examined in [The Victorian Eye](#), Westerners learned to use innovative optical technology and techniques of observation to oversee, measure and control evolving networks of power and production.