The Wheel Revisited

Das Rad wurde vor ungefähr 5500 Jahre erfunden. Das Konzept der Drehbewegung ist jedoch wesentlich älter.

It's fairly common knowledge that the wheel was invented around 5500 years ago. But what was really invented at that time? V. Gordon Childe offers an interesting *slant* on the question. What we should be looking at, he says, is not the wheel itself, but rather the use of *rotary* motion.

The human *wrist* / arm configuration allows 360-degree rotation. That's why hand drills using back and forth hand motions are among the oldest tools. Late stone age *artisans* extended that rotation with various *pivoted* devices. A primitive spinning spindle plays out wool or flax fibres while the operator keeps it moving with thumb and forefinger. Early doors, with a vertical shaft on one side, were anchored in sockets that let them swing open and shut.

The next jump in sophistication was using *bowstrings* to drive back-and-forth rotary motion of drills and fire starters. These devices all ran one way to a limit, or had to unwind. Continuous rotation was the conceptual *hurdle*. Two primary examples, the vehicle wheel and the *potter's* wheel, arose about the same time.

A potter's wheel is a horizontal turntable that holds a lump of *clay* and turns at least 100 rpm. Childe finds one potter's wheel from the region of the Tigris and Euphrates rivers (or present-day Iraq) from as early as 3300 BC. The earliest vehicle wheel turns up in a *cuneiform* document from same region in 3500 BC.

Those dates don't differ much, and examples are too rare to fix dates accurately. So, to the best of our knowledge, not just the wheel, but continuous rotation itself, dates from five and a half millennia ago in the *Fertile Crescent* of the ancient world. Another invention, closely *kin* to the wheel, was the *compass* for making circles. The first *hinged* compasses also trace to that same region, 5500 years ago.

Early wheels show a progression of understanding. The first wheels were cut from huge wooden *slabs*, built up of boards. In other words, the lay of the wood seems to fight the rotary motion it's meant to accomplish. Not 'til 2000 BC do we find wheels with *spokes*. The spoke introduces a new *subtlety* since it's loaded in tension, not compression. A vehicle hangs on the wheel's upper spokes; it doesn't ride on the lower ones.

Other questions of rotation had to be answered: Wheels are best left free to rotate on a fixed axis. If they're anchored to a rotating axle, then they can't turn at different speeds going around a corner. The idea of a *swivelled* front axle, that can turn into a curve, is barely 2000 years old.

And so it is not the wheel itself, but the problem of rotation, that's *dogged* our minds for thousands of years. What the ancient Sumerians did was to recognize the problem. And we have (if I may) spun out the subtle *ramifications* ever since. ■

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artisan	*(Kunst-) Handwerker*
bowstring	*Bogensehne*
clay	*Ton*
compass	*hier: Zirkel*
cuneiform	*Keilschrift*
dog sth., to	*etw. ständig begleiten*
Fertile Crescent	*die Region zwischen Nil und Zweistromland in Form eines "fruchtbaren Halbmonds"*
hinged	*mit Scharnier, aufklappbar*
hurdle	*Hürde*
kin	*Verwandtschaft*
pivot, to	*sich drehen*
potter	*Töpfer*
ramification	*Auswirkung, Konsequenz*
rotary	*Dreh-, drehend*
slab	*Platte*
slant	*hier: Meinung, Blickwinkel*
spoke	*Speiche*
subtlety	*Feinheit, Rafinesse*
swivel, to	*drehen, schwenken*
wrist	*Handgelenk*

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