Twisting for strength

© Wessex Archaeology

Rope in a medieval pile-driver building the Abbey wharf on the Kennet

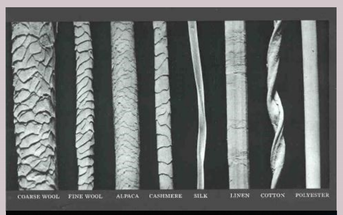
When you pull on pieces of rope or string or even just a length of wool you need a lot of force to break them

But if we untwist them we see they are often made of just short fibres

Late Stone Age people knew that twisting fibres together made stronger yarn & the Ancient Egyptians had a hieroglyph for twisted flax

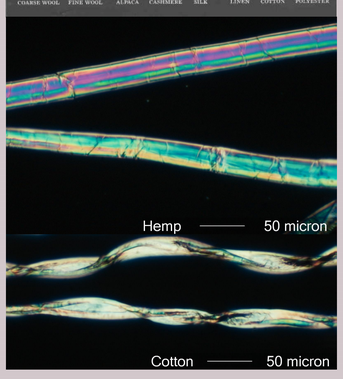
Fibres up close

Scaly or Smooth



Scales
= more friction
= easier to keep twisted together
.....but itchier?

Micrograph of wool CSIRO CC3.0 Wikimedia Commons



Fibre images microlabgallery

When you pull string round a pencil it grips it —that's friction

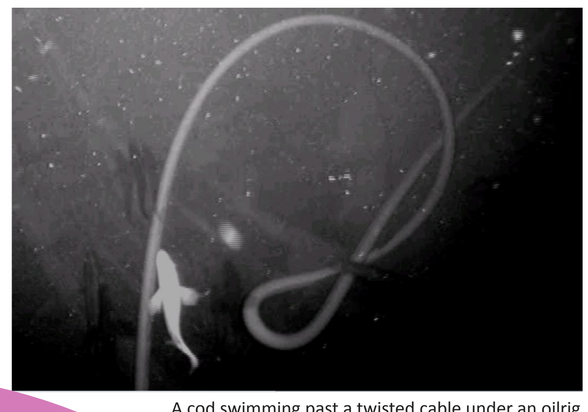
When fibres are twisted together & under tension they are kept together by friction

Photo the Rivers and Canal Trust

Barge people preferred cotton to hemp rope— it's softer on the hands

Pressure between string and itself generates friction forces which stop a knot coming undone. Slippery laces will need more pressure

Sometimes too much twisting is just annoying



A cod swimming past a twisted cable under an oilrig

BUT relaxing tension in an offshore mooring rope can form loops which cost £millions to put right

Photos used courtesy Professor Richard Chaplin