1. Characters:
   1. Martin Bauer: The central character, he travels around the world on an attempt to collect information into a single, easy-to-access series of books.
2. Story (ies?):
3. Appendices:
   1. Appendix 1: On the design of runal energy
      1. Different runes have different effects, but the runes only directly affect themselves and the material they’re made out of.
         1. Some materials are very good at channeling runic energy. Others, not so much.
         2. Rune types:
            1. Vibration- These runes impact the cyclic motion of the atoms in the rune in some way. They are the most powerful and as such the easiest to make, as they don’t need to be very detailed.

Heat: Causes the atoms to gain kinetic energy in random directions at a constant rate, making the rune emit heat in a black-body manner.

The more precise the rune, the more kinetic energy the molecules gain.

The larger the rune, the more material there is putting out heat.

Materials with low specific heats tend to be the most effected.

WARNING: This rune is at risk of burning itself into any material it’s inscribed on. USE CAUTION.

Notable Uses:

Many ancient cultures seem to have known of this rune since antiquity; across the world, though especially in the British Isles, large, rough structures the size of small hills have been found generating low levels of heat. These hills stay warm and snowless throughout the winter, and it is thought that ancient civilizations used them as shelter during cold weather. For more on ancient applications of runes, see Appendix C: Ancient Runes.

Both polar ecosystems rely on heatplants, which have cellular structures in the shape of heat runes. These seem to be the source of their energy, and nearly all polar organisms contain a similar structure in their biology. For more on naturally occurring runes, see Appendix B: Runal Ecology.

Cold: Causes the atoms to lose kinetic energy at a constant rate, dropping its temperature

The more precise the rune, the more quickly the material loses heat.

The larger the run, the more material is losing heat.

Materials with low specific heats tend to be the most effected.

WARNING: Excessivly cold runes have built large ice structures around them in the past, preventing erasure. USE CAUTION.

Notable Uses:

Many broken cold runes have been found in tropical and desert regions, from relatively small structures that seemed to make basic freezers to the entire layout of the city of Timbuktu, which seemed designed to alleviate the incredible heat of its latitude; for more on ancient uses on runes, see Appendix C: Ancient Runes.

Sound: Causes the atoms to vibrate cohesively at a set frequency and amplitude

The precision and size of the rune impacts the amplitude of the sound.

Small structures on the rune impact the frequency; the more structures there are per unit length, the higher the frequency

Thus projected runes can be “tuned” to be a set size and tone, since frequency is dependent on structures per unite length.

Notable Uses:

Being developed in the United States: Low frequency, high amplitude vibrations: drive a crankshaft that can be used to turn a wheel for mechanical energy; for more information see Appendix D: Modern Innovations

* 1. Appendix B: Biological Uses of Runes
  2. Appendix C: Ancient Runes
     1. Ancient Celts:
        1. Heat Rune on hills to keep warm in winter
     2. Mali:
        1. Timbuktu: city laid out in cold rune to keep cool and damp in desert
        2. Trans-saharan commerce: coldboxes
     3. Vikings:
        1. Keep buildings warm
        2. Sheath rune, from Steppes—helped longboat go faster
        3. Heat runes in forges
        4. Relatively little use otherwise
     4. Romans:
        1. Hypocaust
        2. Very permanent structures, runes to preserve structures
        3. Heat runes in forges
     5. Greeks
        1. Minoans
           1. Wind runes on sails
        2. Golden Age
           1. Exploration into runal combination
           2. Archimedes

Collected light runes burned the Roman fleet, forcing a land invasion

* + 1. Babylonians:
       1. Projecting telescopic runes
          1. See Steppe peoples, Mayans
       2. Divert water through canals
    2. Egyptians
       1. Large vertical light rune on pyramids
       2. Divert water through canals
    3. Persians
    4. Aztecs
       1. Large number of stone structures project a rune onto a stone wall once a year to open it in the morning
          1. Similar structure of runes closes the door at the end of the day
          2. People trapped inside
          3. See: Japanese
    5. Mayans
       1. Warlike, but not intrinsic to society
       2. Very advanced mathematics
       3. Also artsy
       4. VERY advanced runes
          1. Many paper codices on scientific research concerning runes
          2. All burned by the Spanish
          3. Author very angry about this
       5. Telescopic runes
    6. Incas
       1. Stonemasonry
       2. Large, precise runes
       3. NOT Artsy; think big scales
    7. Steppe Peoples
       1. Telescopic runes
       2. Runes on arrows
          1. Produce wind in back to extend range, force
          2. Produce sheath of slower air around arrow to reduce drag
    8. Japanese
       1. See Aztecs on one-day rooms
       2. Pruned trees project runes
       3. Calligraphy
       4. Heat runes in castles
          1. Because of high-melting point steel, ornamental runes would become white-hot, mostly for show and impressiveness
       5. Metallurgy
          1. Heat runes used in furnaces and forges
    9. Chinese

Sidelined concepts:

Runal energy flows from areas of high curvature to low curvature

Think of rune circles as potentials, like in batteries:

The more fractally complex [in reality the higher its Hausdorf dimension, but that isn’t understood in-universe yet] a closed loop is, the higher it’s “runal potential”

Therefore, if you have a highly fractal circle on the outside and a highly smooth circle within it, you get a very high runal potential difference that can be used to run runes

The mathematics for runal potential is as follows:

Where ROuter is the radius of the smallest circle that fully contains the curve and RInner is the radius of the largest circle that is fully contained by the curve