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Citation: Ashford, D. (2013). Xaragmata: Translations from the Pelasgian. In: Xaragmata: translations from the Pelagsian. . London: Veer Books. ISBN 978-1-907088-53-7

This is the published version of the paper.

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XARAGMATA

XARAGMATA

Translations
from the Pelasgian

David Ashford

Published by Veer
LONDON

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First published 2012

Printed and bound in the United Kingdom by Lightning Source

Typeset in Garamond

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XARAGMATA

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The Loom Weights

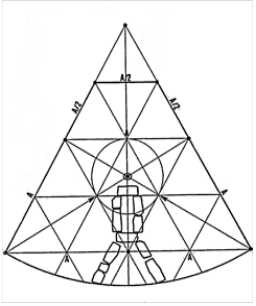
Cult of the Thracian Horseman

Notes on *Xaragmata*

The Fates invented the seven letters: Alpha, Beta, Eta, Tau, Iota, Upsilon. Others say, that Mercury took them from the Cranes in flight; those letters they form as they fly.

– Gaius Julius Hyginus

“Skylla”



The first thing / harmonised the one
in the middle of the sphere is named
THE HEARTH.

Lepenski Vir II. Sculpture No. 43.
Fish-goddess (in trapezoid plan).
By the Lepen Whirlpool in the Iron
Gates of the Danube: 6500-5500BCE.

rich mineral deposits on the surface of things;
geology and prehistory – a
thousand facts induced a thousand
fantasies of form and purpose,
structure and the life which had gone into the making of
what I saw and
what I was.
the strings were the tension
the concavities plunged me into the depth of water,
caves or shadows.
I like to dream of things that rise out of the ground.
receding tides made strange calligraphy
on pale granite sand that sparkled with felspar and mica.

I draw from any point, G,
two perpendicular lines the one to the other, GV, Gζ,
from each of which I take as many as I wish of equal and
contiguous parts,
beginning with G, that I name 1, 2, 3, 4,
etc.; and these numbers are *the exponents*.
Next I join the points of the first –
form a triangle it is *the base* – I join
two points of the second – form a second
And thus joining all
points of division with the one same exponent – /
lines parallel to the sides by their intersection form little squares
I call the cell.
Now, the numbers that are set in each cell are found by this method.

The number of the first cell right angle arbitrary but,
that one being placed,
the others are forced; and for this reason the former is called
generator – /
The number of each cell is equal to that of the cell preceding
in its perpendicular rank,
plus the cell which precedes in its parallel rank.

Let E, C be any two contiguous
cells of one same base: I say that

E (*inferior*) *is to* C (*superior*) *as* 2 (*because there are two cells from* E *to the bottom: namely* E, H) *as* 3 (*because there are three cells from* C *to the top: namely* C, R, μ).

Those who will wish to take an interest will find
perhaps better End therefore with the following
problem – /

A scarlet circle on the wall, a slender white bottle on a shelf near it,
a bright blue box and fishing floats that rest in the hand like a bird,
weighty pebbles, dull grey, some gleaming white, all these move about
the room and as they are placed,
make the room gay or serious,
bright as a frosty morning and
nearly always give a tremendous feeling of work
because they are so much a part of the different seasons and varied light
interrelated masses conveying an emotion;
perfect relationship between the mind and
the colour, light and weight which is the stone.
my studio was a jumble of children, rocks, sculptures,
trees, importunate flowers and washing. We were
picking our salads in the hedgerows,
I wasn't trying to tell a story, but the experience proved a theory I had –
no matter how many people involved – their action & poise & intention
produced drawings rather like a ballet;
though the ballet is contrived.
In a fearful emergency / there is no tumult
but thrusts and stresses of internal structure.

There is no point of local weakness inherent in the system. – /

The great circles of tetra and icosa are discontinuous in octa,
continuous in (Dymaxion),
i.e. vector equlibrium-central
of simultaneously zero phase alt-base-vol.
= empty set
of angular constants and central 2 [mass]
or inherently select [first] [axis].
Both tetra and icosa spinnable into completion of 6 + 15 great circles.
In each case tetra becomes 2 fold as positive negative tetra
inseparable from spherical cube. These 6 great
circles reoccur as doubled in octas visible 3 gt. cir.
and as 6 equations of icosa's primary icosa spun to 15
gt. cir. becomes indivisible 2 tetra
(pos + neg) dodeca + 2 octa. (pos + neg.)
rotatable but non-compressible as are liquids and
triple bond

Tetra
is CRYSTALLINE

For instance in dealing as does nature in such structural complexes as trees. All compressional integrity is flexurally distributed in the liquid or edge = double bond phase where slam loads or shocks are inhibited by compressing of gases = single bonds = vertexial emphasis and these flexibly contained
by crystalline or
triple bond or
facial emphasis in
tensional balance to contained distributive compressions.
footballs aircraft auto-tyres
airfoil struts – employ all
or part of this combination of structural strategies. – / All
these responses spring from a factual & tactile approach to the object.

To go on seemed sensible. To descend a very hard discipline.
I would like to be an astronaut and go round the moon, and

may be remain in orbit forever. But I would not like to land in case the light of the moon went out forever and all poetry die and deeper anguish descend on this anguished earth. But my son Paul once told me there was a new aesthetic in flying and in space and maybe these many brave men will guide us.

The Spindle-Whorl

Turdas-Vinča culture: 5200-4900BCE
A spindle whorl from Lepenski Vir III
in the Iron Gates region of the Danube.

I 12 sine/square wave generators (Jason) associated with keying unit and adjustable decat unit (workshop construction)
High stability decade sine wave generator (Muirhead-Wigan)
Sine wave generator with frequency modulation
Square wave shaper (Muirhead)
Zither and guitar with electromagnetic pick-ups

II Reverberation plate (EMT) with remote control
4 high/low pass filters with 9 cut-off frequencies (BBC)
Variable frequency response control unit (BBC)

III Tape recorder, 7½ and 15 i.p.s. (EMI, BTR 2)
3 tape recorders, 7½ and 15 i.p.s. (Philips, EL3503)
Tape recorder, 7½ and 15 i.p.s. (Ferrograph)
Disk playing equipment (BBC)
8-track tape recorder with continuously variable speed from 0 to 40 i.p.s.; uses 1" tape (Leevers Rich)
Specially designed mixing controls with 20 channels each with pre-set attenuator / 8 channels are normally associated with 8-track tape recorder.
The remaining 12 lowlevel input channels with switching facilities making available three types of artificial reverberation. Each channel independent, or switched to either / of two group faders associated with different filters.
Remote control of 4 tape recorders & acoustic fold-back facilities included.

IV Oscilloscope (Cossor, double beam)
Peak programme meters (BBC)

V Loudspeakers (BBC)

I was there in the Blitz /
there are four warnings –
the red, the grey, the black, and /
my love for abstract / the air-raid
Sirens ; that's a sound you hear and you
don't know
the source of – /
Nothing surely can have less pretension to the name of musical sound
than the solitary snap of a quill,
but when that quill is held to the teeth of a wheel whirling
rate 720 teeth passing per second –
the sound of g
in alt – /
Equal in sweetness to the organ- or flute-bird – /

Thursday 23rd
"Beautiful bird babies"

	wob. used to de-mod. P.A.Stab., c.2-K/cs_
Technique	used to give different wob.ing notes fr K.U. oscs.
	4 oscs. in suitable range keyed fairly randomly
	with atts. 3, decs 4. app. This gives basic.
	1st stage treatment is replaying (at ½ spe?) (b/w)
	with Ph./Temp.a rec/rep loop (pitch + [maj?])
	2nd stage: ½ sp. [agar?] + Ph.15 f/b_ etc
	V. changing basic freq. but controlled (4 gliss oscs)
Theory	" " + additional tempophon rises
	incidence of notes " - pattern
	(1 sec. swing of wob.)
	(+ temp.a loop length)
	" " loudness but within limits
	(attack + decay) & with pattern
	constant rate of glissando.

Mathematically expressed the distance of the vibrating
point from its mean position at any time is equal
to the sine of an arc
proportional to the corresponding time, and hence the form

of simple vibrations
is known as the curve of *sines* – /
From this property of making the liquid sound
they are thus designated
[Sirens].

Let the resonance chamber cap the prime
with some upper partials of the compound
tone and
the quality of tone thus produced
resembles one of the vowels of the human voice – /

A noir
E blanc
I rouge
U vert
O bleu:

In his *Handbuch der Physiologischen Optik*
Prof. Helmholtz gives the following analogies
between the notes of the piano and the colors of the spectrum :

F#, end of the Red.
G, Red.
G#, Red.
A#, Orange-red.
B, Orange.
c, Yellow.
c#, Green.
d, Greenish-blue.
d#, Cyanogen-blue.
e, Indigo-blue.
f, Violet.
f#, Violet.
g, Ultra-violet.
g#, "
a, "
a#, "
b, end of the solar spectrum.
the scale therefore extends to about a Fourth beyond the octave. – Translator.

So colored this Object like a spindle-whorl
layers of track over each disc : but differing
in thickness 1 1/3 times that of the 2nd and
twice that the 3rd [i.e. constituent musical
tones –/ on the edge of each disc a Siren at

1: moving the whole revolution producing
singular harmony ín cóncórd súm ís sóund

These raw, elemental sounds were then intricately cut, shaped filtered and manipulated in various ways until finally, the separate tracks were ready to be mixed and synchronized.

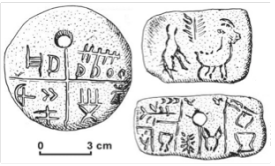
low blocks of S. in the S. modulated
sine waves & wobbulator;
filtered to even out intensities.
low rate wobbulator swing
Also inharmonic chords.
Beriobashes - long, low,
Slow cross from one to the other: same freq. band.
All sounds outwardly static
but for v.slow intensity
vibrato (breathing rhythm), (4sec./c.)
and inwardly moving,
changing, by using wobbulator
& also by changing filtering
:. Audiobaton & PEUs.
Coloured silences: coloured screens.
Continuous sounds shaped into single notes for comment.
Sounds for phrase pre-echo: to be
comparable with speech quality,
and to come naturally out of
continuous sounds.
Movement of sounds within static
surface obtained by beats, wobbulator,
altering filtering & by several mobius
loops running tog., faded in & out at
joints.
from slowed down sounds, inharmonic
cymbal, bell, echo plate
Main technique for organising long
continuous sounds: 3 mobius loops, v. long,
with long fades. If necessary,
work at double speed

"Roof" over basic low sounds - high shafts of colour
& cont, high dreamy sound.
dawn plain sound
words: colour, stained glass windows, sunlight,
coloured dreams, clouds etc.
being chased - along corridors, down stairs, across fields
falling
breathing-heartbeat. pillow, sun
murmuring voices - long mixes, voices out of nothing

The siren's song has not yet been rendered
powerless by reduction to condition of art.

I'll speak some day of that dark nativity – /
men pend upon
bone;
their perimeters shrivel.

The Loom-Weights



Cucuteni-Trypillian culture: 4800-3000BCE
Extending from the Carpathian Mountains
to the estuaries of the Dniester and Dnieper.

Taking the cube of a binomial; let *X* equal one unknown and *Y* equal the other unknown.

The square of a binomial $(x\text{-}y)^2$ breaks down to $x^2 - 2xy - y^2$. The first number indicates the number of unknowns - 2, a binomial; 3, a trinomial; the second number indicates the power of the equation - 2, a square; 3, a cube . . .

The resulting equation - *xxxy x yyy* - is an eight unit one, and is the basis for the draft.

If the equation is applied to a plain weave, *x* is given one colour or texture value, and y is given another. Color principles will be used in selecting colors. One thread is substituted for each *x* or *y* with the pattern repeat being 8 threads.

The overshot weave is one used muchly by handweavers. The x may be given the value of two harnesses as 1-2; and *y* the value of 3-4. As many as four unknowns may be used with 1-2, 2-3, 3-4, and 1-4 being the harness pairing assigned. Should 2 threads have been used for each part, a 16 thread pattern repeat results. The threading draft may be used for overshot or a twill, opposite or other treadling may be used.

The cube of a binomial was the first to suggest itself to Miss Dietz on her starting to work with the idea in 1946. The same cube of a binomial $(x+y)^3$ seems to be the approach used by most applying Miss Dietz' idea to textiles.

And lest - according to Helen Lawton's expression in the Louisville COURIER-JOURNAL - you end up with the wrong answer instead

of a pair of drapes, here are the details:

$$x^3 + 3\,x^2\,y + 3\,x\,y^2 + y^3$$

The resulting equation - *xxxxx y xx y xx y x yy x yy x yyyyy* - is a 24 unit one. These 24 units will form the basis of writing the pattern in any weave.

The cube of a binomial $(x+y)^3$ can be expanded - or can be used in combination. As Miss Dietz was formerly a math teacher, don't you imagine she was happy when she wrote that equation: tossing in an extra xy, and then - as that man on the radio was spelling something backward - writing the equation backward. Wrong answer? No! Joking aside, Miss Dietz shows four of the possibilities to be found in the cube of a binomial.

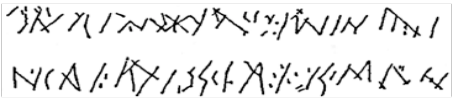
"I found it possible to write the draft for any formula as long as there were sufficient combinations of harnesses to substitute for the terms of the alegebraic expressions."

"As patterns grew and possibilities opened, I found that mathematics gave the beautiful space divisions, proportions, and individuality of pattern which the artist strives to achieve."

personalities back of an idea are of import - you feel you know Ada K. Dietz weaving the rug in $(x+y)^3$ on "Brunhilda" with Ruth E. Foster, standing there with the yarns.

If you have pioneer blood,
I think you will go from that frontier Miss Dietz has shown you

Cult of the Thracian Horseman



[*An inscription in Sitovo Cave. Ancient Thrace.*]

An eight-ft tall Probability-Machine named
Sir Francis compares stock-market returns
to pebbles that surge from narrows to pass

through a quincunx for a series of vertical
shafts that accept every possible outcome
to a sequence of errors; a god of Unreason

a matrix of 87 languages with 2,449 lexical
items producing an estimated 7,800/9,800
BP [Result was robust to changes in coding

procedures, calibration points, rooting and
priors.] The presence or absence of a word
from each cognate set, was coded as 1 or 0.

Is like saying R1a1 Poland Russia Ukraine
Pakistan Y-DNA R-M17 – shows a strong
correlation 60% [blue /green eyes] So that

feign to resurrect on a system restore point
kurgan or motherland. Legs are contracted
kér $h_a$eghnutór moi $h_1$ékuons A Sheep said

h_aéğontm $h_a$nérm uidntéi! /… Bortkiewicz
tabulating the number of Prussian soldiers
kickd to death by a horse that their buried

bodies project an unlikely bell curve – / ...

Notes on *Xaragmata*

According to most histories the writing "translated" in these poems should not exist. Sumerians invented writing around 3200 BCE. The alphabet was invented later by the Phoenicians around 1050 BCE; and this is usually believed to have been derived from the Proto-Sinaitic script, in use from around 1850 BCE. The *Vinča* or Danube or Old European symbols do not conform to what we thought we knew of the past. Found on household artefacts across south-east Europe, the symbols are in the wrong place and from the wrong time – the oldest of these artefacts being a wooden disk carbon-dated to 5260BCE.

From northern Greece, the symbols proliferate with the rise of the Vinča culture in the Lower Danube and then can be seen to spread north along the shores of the Black Sea with the rise of the Cucuteni-Trypillian culture from 4800BCE.

Though sometimes called "proto-writing", the linearity of the Old European script, plus the limited number of symbols employed, must make this designation dubious; the first being a feature consistent with true writing; the latter with the alphabet and syllabary. In fact, some Vinča signs look rather more like certain characters in Greek, Etruscan and Indus than the ostensible originals for the latter in the Phoenician script.

This apparent (perhaps deceptive) familiarity encourages (often wild) speculation. This poem participates in this creative paranoia, beginning with the assumption that the half-dozen basic symbols represent vowels, that additional marks modifying these represent consonants: – a semi-syllabary, like the later Iberian script, but part too of the, as yet, incomplete alphabet – those six/seven letters that Robert Graves believed the Pelasgoi possessed before King Cadmus brought the Phoenician letters to Greece.

I. "Skylla"

The Lepenski Vir culture pre-dates the Vinča culture that spread from the south and perhaps even less is known about it. The central settlement is in the Iron Gates gorge of the Danube on a plateau opposite a whirlpool that would have represented a threat to early sailors. Here, this people raised houses of startling uniformity and geometric rigour. Beginning with a hearth-stone, this tribe employed skills later associated with the Pythagoreans, first describing then bisecting circles spun from this central point, to produce a series of interlocking triangles (a "magic triangle", in fact) – a trapezoid plan.

Something resembling concrete was then poured around the stones at the heart of this complex, and a superstructure raised over the whole. The final result anticipated the later *megaron*: a sacred precinct slightly set apart from the rest was yet an integral part of the domestic space. The sculptures of the gods set up to watch over the house seem fish-like in form, carved from boulders smoothed by the action of the river, and though the product of evident affection on the part of the artist, communicate strong sensations of terror: testifying to the unease that compelled the erection of the elegant mathematical structures on the edge of the Lepen whirlpool.

In *The Living Goddess* (1999), Gimbutas conflates Lepenski Vir with a matriarchal belief-system said to extend across Europe in this era. In contrast, Dragoslav Srejovic, in *Europe's First Monumental Sculpture: new discoveries at Lepenski Vir* (1972), states

that the culture was undoubtedly patriarchal, perceiving a story of power struggles in the changing patterns of settlement. Which interpretation is correct? – Markings that resemble symbols that appear in the later Vinča script are certainly present but there are significant discontinuities too. As Srejovic notes, later inhabitants of the site did not construct houses on the same rigorous geometrical model of the earlier culture. To some degree the mathematical / magical traditions of the original Lepenski Vir had been lost with the arrival of these strangers from the south.

I therefore liken Sculpture Number 43 – one of the few sculptures from the site not possessing a nickname – to *Skylla*: a figure in Greek mythology said to have suffered from the magical practices of the sorceress Kirke, a goddesses that Gimbutas identifies with the Vinča.

This section of the poem is constructed from the following found material:

– Philolaus, *On the World* (now lost, this passage is quoted by Stobaeus in *Anthology*: I xxi 7-8.)
– Barbara Hepworth, *A Pictorial Autobiography* (London: Tate Publishing, 1985).
– Blaise Pascal, *Traité du triangle arithmétique* (1653). The text follows the translation produced by Anna Savitsky and published in David Eugene Smith, *A Source Book in Mathematics* (Courier Dover Publications, 1959).
– Hugh Kenner, *Geodesic Math and How To Use It* (University of California Press, 1976).
– R. Buckminster-Fuller, "Project – Noah's Ark No. II" (Buckminster-Fuller archive at the University of Stanford: Collection No. M1090 – Box 9, Folder 6).

II. The Spindle-Whorl

In *The Goddesses and Gods of Old Europe* (1974); *The Language of the Goddess* (1989), *The Civilisation of the Goddess* (1991), and *The Living Goddesses* (1999), celebrated Soviet archaeologist Marija Gimbutas argues that – prior to the invasion of patriarchal indo-European peoples – there existed a European-wide, Matriarchal culture. While the conflation of so many varied cultures strikes me as no less reductive than previous Structuralist readings, I was fascinated by certain passages relating to the bird-goddess that suggested the Sirens, the Harpies and the Fates were once one and the same thing. In Plato's *Republic*, Gimbutas points out, the Sirens are not, as in Homer, demons merely, preying upon strangers, but are part of the fabric of creation, occupying a place on each the discs that make up a strange object resembling a *spindle-whorl*, said to represent the physical universe.

Plato's description of the latter recalls other objects in Greek writings that attempt to explain musical harmony. – Not by chance, these resemble the early forms of siren being developed in nineteenth-century Europe by scientists such as Hermann von Helmholtz, to investigate physical properties of sound. This work provided the basis for experiments in synthesised music in the next century, by pioneers such as Delia Derbyshire.

This section celebrates this woman's life and work (just as the previous poem is a tribute to sculptor Barbara Hepworth). Much of the found poetry featured in this part is taken from the Delia Derbyshire archives, recently put together by the librarians at the University of Manchester.

– Delia Derbyshire, Inventory for the BBC Radiophonic Workshop – DD155144

– Delia Derbyshire – in an interview with John Cavanagh for *Boazine* 7.
– The Home Office, *Civil Defence Bulletin* (1964)
– John Robison and James Watt, *A System of Mechanical Philosophy*, Vol. 4 (London: J. Murray, 1822).
– Delia Derbyshire, Notes for "Naked Sun" – DD152702, DD152792.
– Hermann von Helmholtz, *On the Sensations of Tone as a Physiological Basis for the Theory of Music*, trans. Alexander John Ellis (London: Longmans, Green, 1912).
– Charles Caniard de la Tour, *Sur la Sirene, nouvelle machine d'acoustique destinee a mesures les vibrations de l'air qui contient la son* (1819).
– Arthur Rimbaud, "Voyelles" (1872).
– Max Horkheimer and Theodore W. Adorno, *Dialectic of Enlightenment* (1974), trans. Edmund Jephcott (Stanford University Press, 2002)
– Homer, *The Odyssey* (Harvard: Loeb Classical Library, 1995).
– Delia Derbyshire, "On Doctor Who music" – DD15522.
– Scholia on Plato, Plato 108D; as translated by Jonathan Barnes in section on Hippasus in *Early Greek Philosophy*: 'The story means to ascribe to Hippasus the discovery of the fundamental musical ratios, 4:3, 3:2 and 2:1.' (London: Penguin, 2001; p.174).
– Plato, "The Myth of Er", *The Republic*, (Harvard: Loeb Classical Library, 2013).
– Delia Derbyshire, Notes for "The Dreams" – DD153803.

III. The Loom Weights

My own understanding of the Vinča script first began to take shape when I recognized symbols on a bread-seal as star-signs (inverted so as to appear the right way around when stamped onto the bread). The thought of a culture committing its religious mysteries to pastry appealed to me. What had struck me most forcibly about these cultures was the extent to which the domestic and sacred had not as yet been compartmentalized. If there is poetry to be found in these scripts it must be functional: no false division between star-signs, musical notation, writing and mathematics. If there is truth in W.H. Auden's idea that *poetry makes nothing happen* this is something beyond the obvious meaning: *poesis* means *making*.

– M.S.F. Hood, "The Tartaria Tablets", *Antiquity*, No. 41, pp.99-102 (1967).
– J. Makkay, "The Tartaria Tablets", *Orientalia*, No. 37, pp.272-289 (1968).
– Shan M.M. Winn, *Pre-Writing in Southeastern Europe: The Sign System of the Vinča Culture ca. 4000BC* (Calgary: Western Publishers, 1981).
– D.G. Zanotti, "The Position of the Tartaria Tablets within the Southeast European Copper Age," *American Journal of Archaeology*, No. 87, pp.209-213 (1983).

The section is taken entirely from the work of another "culture-hero", the American Ada K. Dietz: her *Algebraic Expressions in Handwoven Textiles* (Louisville, Kentucky: The Little Loom House, 1949)

IV. Cult of the Thracian Horseman

Interpretation of this inscription reflects the fraught history of this region in Europe.

These letters continue to attract the attention of cranks with nationalist axe to grind. Macedonian – if read from left to right. Albanian – if read from right to left. – Marija Gimbutas might have taken a grim delight in the fact that – however these letters are read – they are invariably taken to mark the passing of some patriarch. In the writing of Gimbutas both languages (and the patriarchal system) can be traced to the Kurgan invaders from the Eurasian steppes, who overwhelmed the indigenous cultures of Old Europe in the period in which the letters were carved. Her theory has been confirmed by the geneticists (studying the male-chromosome in European DNA) and discredited by the linguists (who argue that the Old Europeans in this region were Indo-European themselves). What caught my interest was not the controversy itself – but the fact that the geneticists and linguists alike were obtaining their mutually exclusive results from the same mathematical procedures. Sir Francis Galton was the first theologian of what he termed the "god of unreason". In this poem he therefore represents the father-god that has been presiding spirit in Western culture since the incursion of the Thracian (or Phrygian) Horseman. A reproduction of the "Probability Machine" he described, in the headquarters of *Index Financial Advisors*, stands as a totemic acknowledgement of the extent to which our current economic system relies upon the theories of Galton.

As the quincunx pattern might suggest, the mathematics represent a development of the magic triangle in part one, another application of the Binomial Theories traced through sections two and three: the sacred wisdom I am attributing to these forgotten tribes. Ladislaus Bortkiewicz was the first to collate randomly generated data on an X/Y axis – thereby discovering that these corresponded to Poisson's Distribution (a sine wave). Famously, the dataset consisted of the number of Prussian soldiers killed by horses. In the poem the probability curve (the chances of death by horse) is likened to the shape of those tumuli, the burial mounds, from which the Kurgan have derived their name.

– Sir Francis Galton, *Natural Inheritance* (London: Macmillan, 1894).
– Marija Gimbutas, *The Prehistory of Eastern Europe*, *Part 1* (Cambridge, Mass.: Peabody Museum, 1956)
– Colin Renfrew, *Archaeology and Language: The Puzzle of Indo-European Origins* (London: Pimlico, 1987)
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– R.S. Wells, "The Eurasian Heartland: A continental perspective on Y-chromosome diversity", *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 98, No. 18, 2001, pp.10244-10249.
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