

Numbering, where trees move
Enrica Colabella
Generative Design lab, Argenia Association
www.generativeart.com
enrica.colabella@polimi.it



Abstract

*Listen. It is night moving in the streets, the
processional
salt slow musical wind in Coronation
Street and Cockle Row,
it is the grass growing on Llaregyb Hill,
dewfall, Star fall,
the sleep of birds in Milk Wood
Dylan Thomas, Under the Milk Wood [1]*

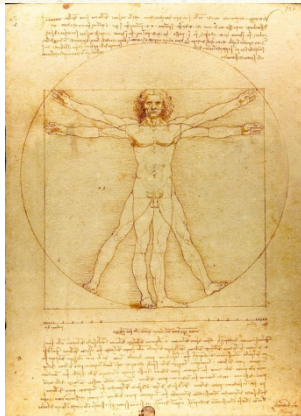
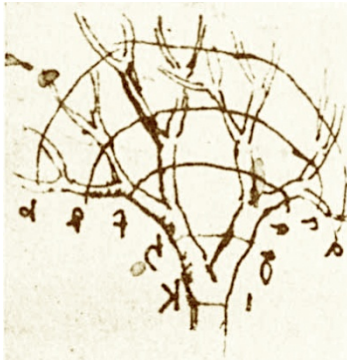
This paper is an investigation about the ancient tradition connected to the deep relationship between the tree and the human beings. It works as a double structure between the alive world of the unveiling silence of nature and the human mind and heart, able to perform **a commune language** mirrored in art, poetry, and music, *time after time*, from oral tradition until our digital time.

A generative process of discovering visionary sounds and designing algorithms can produce endless variations as a deep *liquid mirror* from the natural sites eared in the deepness of the human feeling

1- Aim

Main aim of this paper is discovering historical artworks around Nature rules for complex generative art processes. Leonardo was a unique experimental visionary artist. Each his artwork is a representation of a complex science *abducted* by his nature observation. Inside them, we discover a *compendium* of science

that he observed experimenting in a continuum auto learning fixed in his artworks



[2]-Leonardo da Vinci, Study of the proportional growth of the branches of a tree

[3] Leonardo, L'Uomo di Vitruvio: "*Tanto apre l'omo ne' le braccia quanto è la sua altezza*" As man can open his arms as his heightnon.

[4] Leonardo da Vinci, Allegory of the Wolf and the Eagle

AS NATURAL INFINITE

Leonardo defined philosophy as "*images of mental talk*" by drawing a deep parallelism between Nature and Reason. Luca Pacioli suggested Leonardo to read the V book by Euclide. This was a basic point that he extended with genial intuition, by using proportions also in time, space, sounds, weights, sites etc. By this scientific investigation he discovered "*... varie e strane forme fatte dalla artificiosa Natura...*" (...variant strange shapes made by Artificial Nature..), that he fixed in sketches, used later as codes in his works.

His scripts edited only in 1881 were pressed as a simple first draft on a wax table in only one passage, by using a Roman technique. These were written all in a *reverse way*. It is possible to read them only in front of a mirror, for emerging a similarity between natural process and interpreted reality.

Tree in poetry numbering

*"Our life away from public haunt, finds
tongue in trees....."*

William Shakespeare, As You Like It

Numbering is the site where trees move for generating *tongue*, full of all human impressions from the *trans-dreamed* real Nature world. This paper tries to focus an actual transfiguration in our digital time of the ancient process of discovering a **similarity** between the natural world and the art process.

*Numbering, where trees move /
Numerando, dove si muovono gli alberi*

*Chi si fa piccolo come un bambino
sarà il più grande nel regno dei cieli.
Who becomes small as a child
He will be the greatest in the kingdom of
heaven*

When trees move, sounds deeply static
brighten./Quando gli alberi si muovono, i
suoni profondamente statici si illuminano.
The movement of trees from their more
hidden roots/Il movimento degli alberi
dalle loro radici più nascoste
Until their highest leaf toward the sky
lightness/Fino alla loro foglia più alta
verso la luminosità del cielo
Becomes like the first step of an unstable
child/ Diventa come il primo passo di un
bambino instabile
Left for the first time alone from tender
helping hands, / Lasciato per la prima
volta solo dall'aiuto di tenere mani
For discovering the wonderful human
ability in crossing space/time;/ Per
scoprire la meravigliosa abilità umana
nell'attraversare lo spazio/tempo;
As a similarity between human legs and
woody trunks of strong cortex/ Come una
somiglianza tra gambe umane e tronchi
legnosi di forte corteccia
A skin oblique for roundness in its slow
moving generates color permutations,/ Una
pelle obliqua per rotondità nel suo
movimento lento genera permutazioni di
colore,
For following the rays of the sun together
with the lunar splendor./ Per seguire i
raggi del sole sino allo splendore lunare.
Alternate continuous faces in the flow of
life/ Volti continui alternativi nel flusso
della vita,
Small steps in the silence of the
transmuting night perform./Formano
piccoli passi nel silenzio della notte
trasmutante.
Sunlight expands fast in the eternal new

day of life./ La luce del sole si espande
veloce nell'eterno nuovo giorno della vita.
... "Where are you going said reader to
rider..."

I stay firm listening, waiting for the new
light of the day./ Sono ferma in ascolto,
aspettando la nuova luce del giorno.
Fixed with the tarantula in my heart, I wait
for seeing the tree moving/ Fissa con la
tarantola nel cuore, aspetto di veder il
muoversi del l'albero

Like in a fable, where truth mixes with the
mystery of life, / Come in una favola, dove
la verità si mescola al mistero della vita,
Silent and multiform, generating infinite
variations following a music at time/
Silenziosa e multiforme generando
variazioni infinite che seguono una musica
a tempo

A transforming site from where we come
and where we will stop passing the baton.
/ Da un luogo in trasformazione da dove
veniamo e verso dove ci fermeremo
passando il testimone.

Memorie di un passato sospeso, che solo
la natura ci racconta con canto indelebile
anche se spezzato dalla umana vanità /
Memories of a suspended past, which
only nature tells us with indelible song
even if broken by human vanity.

For a silent, just about impalpable caress /
Per una carezza silenziosa, quasi
impalpabile

The tree moves slowly on the river bank /
L'albero si muove lentamente sulla
sponda del fiume

Following the rhythm of the flow of water
like an ancient song/ Seguendo il ritmo
dello scorrere dell'acqua come un canto
antico

Always the same where only varies the
flexibility of the deciduous caducus, like a
branch off a tree/ Sempre uguale dove
varia solo la flessibilità del caduco, fragile
come un ramo spezzato da un albero
As irreversible uniqueness of life. / Come
unicità irreversibile della vita.

A fragile air moves the leaves in the dark/
Un'aria fragile smuove le foglie nel buio
Following the song, that dictates the

natural rhythm/ Seguendo il canto che
detta il ritmo naturale
Until in the smallest parts of the live. / Sin
nelle più piccole parti del vivo.
The sound movement connects the parts
of the living/ Il movimento sonoro connette
le parti dei vivi
With the past as a single timeless flow. /
Col passato come un unico flusso senza
tempo.
The light returns on the darkness of the
night. / Torna la luce sul buio della notte.
A new and unique unrepeatable day/ Un
nuovo giorno unico ed irripetibile
In the continuous ancient flow of life. / Nel
flusso antico continuo della vita.

Numbering, a *longanimous* structure for a complex GA process

Longanimous is an attribute for the time
that changes, while remaining the same in
its structure.

Structure configures itself adapting its
identical past toward a future in possible
evolution

The true progress happens through its
internal development.

Change, on the other hand, occurs when
one doctrine transforms itself into another.
It is therefore necessary that, as the times
progress, the understanding, the science
and the wisdom of the individual as well
as of everyone grow and progress as
much as possible.

The wisdom of souls follows the same law
that regulates the life of bodies. These in
fact, although growing and developing
over the years, remain the same as
before.

Certainly, a great deal of difference
between the flower of young age and the
harvest of oldness runs, but these belong
to the same teenagers as once those that
become old. The age and the condition
are therefore changed, but it is always the
same individual. Nature is unique and
identical; the person is unique and

identical.

The infant's limbs are small, larger than
those of the young are, but they are the
same. The limbs of the adult man no
longer have the proportions of those of the
child.

However, those that exist at a more
mature age already existed, as everyone
knows, in the *embryo*, so that as regards
parts of the body. Nothing new adults can
gain that has

not already been present in children,
even if in an embryonic state.

There is no doubt about it. This is the true
and authentic law of organic progress.

This is the wonderful order placed by
nature for all growth

The not linear complexity of this order
works by *numbering* structures.

Montaigne described this process in one
of his artwork: "*Thoughts*".

"*My ego of to-day and my ego of
tomorrow are certainly two*"

Tree numbering as a language

A written language that speaks of trees:
the *Ogamic* Alphabet by Druids [5]

One of the most important expressions of
a civilization's culture is the type of writing
it uses to shape its *oral* language.

The Old Irish was written in a completely
peculiar alphabet that is traced back to the
Druids, and was probably invented by
them only in the late period, when their
cult was declining. The Druids, in fact, did
not trust the written word, and passed on
their knowledge only orally.

For the Druid civilization the connection
with nature was lived in a much more
visceral and complete way than it is for us
today. Among all the essences of the
plant world were the trees to be held in
greater consideration, so much so that we
saw how also the Celtic calendar was
based on some trees considered of
particular relevance.

The writing invented by the Druids works
on the so-called *Ogamic* Alphabet and is

inspired by trees. In fact, it was read not from left to right, like ours, nor from right to left, but **from the bottom upwards**, because this is the direction in which the trees grow.

It was also written on pieces of wood, and this is the reason why we have so few testimonies. The few remains that remained are those carved on stone.



The *Ogamic* alphabet owes its name to the god Ogma, a deity that we can roughly associate with Mars and that was part of the Celtic pantheon. According to another curious legend, it was invented by the Shiite king Fenius Farsa after the destruction of the Tower of Babel, and **elected as an expression of the best existing language.**

In short, we can consider the *ogamic* language a sort of "Esperanto".

The letters of the ogamic alphabet are twenty and are called "*fedá*", a term that means "**tree**".

They are divided into four "*aicme*" (families) each of five letters. The letters are very simple:

they are formed by a *vertical line* and five differently oriented signs:

upwards, downwards, perpendicularly, to the right or left of the central axis.

It is thought that these signs also expressed a sort of "**silent alphabet**" that could be expressed **by moving and touching the fingers of the hand.**



Here are the twenty faiths, divided into *aicme*:

First *aicme*: B beith (birch); L luis (sorb); F fearn (alder); S saille (willow); N nuin (ash)

Second *aicme*: H úath (hawthorn); D duir (oak); T tinne (holly); C coll (hazel); Q ceirt (wild apple)

Third *aicme*: M muin (vine); G gort (ivy); NG gétal (rush); Z straif (blackthorn); R ruis (elderberry)

Quarta *aicme*: A ailm (silver fir); O onn (gorse); U úr (erica); E edad (white poplar); I idad (rate)

Each letter was pregnant with symbolic and esoteric meanings that transcended mere transcription: each letter, each ogham had **the power that derived from the tree from which it took its name.**

2. *Numbering* as a *unifying* principle [6]

In the archaic universe, all things were signs and signatures of each other for their interpretation with subtlety and overall *the number* dominated.

Two great interpreters and inventors of the ancient world were Kepler with his tireless calculations and his passionate devotion to the dream of discovering the "*Harmony of the spheres*", as a follower of the ancient order. His dream led him to prefigure the polyphony that was to lead to Bach. The second] was Isaac Newton, the initiator of the strictly scientific vision.

The mountain[7]

Nature as discovering of the **time fragment** in the number variations



Paul Cézanne, views of the Montagne Sainte-Victoire painted between 1882 and 1906

"If equal affection cannot be, let the more loving one be me."

W. H. Auden, *"The More Loving One"*
Virgilio:[8]

The tree cries, sighs, and moans with a human voice ... it is believed to be the wind: but often they are also their internal circulation ... the disturbances of their sap, the dreams of their plant soul.

The ancient world has never doubted that the tree had a soul-confused, perhaps obscure, but a soul, as well as any other animated being. Humanity believed it for ten thousand years, before the school age that petrified nature. Today science teaches us exactly the opposite, getting very close to ancient beliefs. Every being, it tells us, even the most primitive, embodies the travail, the effort, a certain feeling of having to assure and increase one's existence, as well as the possibility of choice (the word is Darwin's) and of the use sometimes very skilful of the tools that lead to this result. Each has the particular art to exist, grow and unceasingly recreate itself.

THE SHADOW

"At the still point, there the dance is."
T. S. Eliot, *"Four Quartets"*

Dialog between Sapientia and Armonia

Armonia thunders from the high of the valley:

"Code is violated, duplicated, hybrid triplicated, without any borders.

I am broken everywhere. Please say to me, **Sapientia**, where I can find my original structure and cover with a veil of beauty the new generation incoming".

"It's true, I was yet conscious about.

I am very sorry, but no one artificial will compensate for the broken song.

The new ancient hybridism tries to translate the language of another species into ours, simplifying itself in something perceived as a real new generation, from the first-born to actual one, with the freeze the vehemence of expressionless.

It is too late for removing the corners full of pride.

You laugh, inside the displaced blankets of love,

You reveal yourself, winner, without any punctuation.

The morning air sweeps you out, without ever sensation of pity.

It is coming to the lightness, covering your pretty face.

The tear's traces disappear, in the last losing smell of night.

You are still alive in the reverberation of the sound

Of a white American tree, in the folds of time.

Nunc et in aleatoria tabula.

Tuo /Yours

*in memory of the lucent trees in my
tender South-land*



All'improvviso in un giorno di sole con la
terra asciutta /Suddenly on a sunny day
with dry land
Uomini stranieri perforarono la terra
strappando le tue radici antiche / Foreign
men pierced the earth by ripping your
ancient roots
E ti hanno portato via senza alcuno
indugio. / And they took you away without
any delay.
Hanno strappato i nostri intrecci antichi
dove scambiavamo i nostri umori solidali /
They ripped out our ancient weaves where
we exchanged our sympathetic moods
Da un tempo quasi infinito, secoli di
incontri e solidarietà./ From an almost
infinite time, centuries of meetings and
solidarity.
The scent of my leaves that I expanded to
your sap.
La tua ombra fraterna gestiva il mio giorno
e la mia sera/ Your fraternal shadow
managed my day and my evening
Mentre cercavo di rimandarti come una
dolce carezza/ While trying to send you
back like a sweet caress
Il profumo delle tue foglie che espandevi
fino dalla tua linfa. / The scent of my
leaves that you expanded since from your
sap.
Per secoli il rito si ripeteva
quotidianamente. / For centuries the ritual
was repeated every day.
Of intense, warm light, full of the smell of
the sea that was close to life.
Sino a quella mattina quando un mercante

ti comprò/ Until that morning when a
merchant bought you
Quasi fosse una cosa da trasportare per il
suo diletto/ As if it was something to carry
out for his pleasure
In una terra straniera, fredda lontana
senza il mio umore confinante/ In a
foreign land, cold far away without my
neighboring mood
Né lo spessore della nostra terra, la sua
acqua, il suo vento e la sua ombra /
Neither the depth of our land, its water, its
wind and its shadow
Di luce intensa, calda, piena di odore di
mare che vicino ritmava la vita./ Of
intense, warm light, full of the smell of the
sea that was close gave rhythm to life.
Il tuo travaglio di espanto, di viaggio, di
trapianto ti ha segnato per sempre./ Your
labor of expanting, traveling, transplanting
has marked you forever,
Sarai sempre solo senza di me e senza la
nostra luce e il rumore del mare / You will
always be alone without me and without
our light and the sound of the sea
E i nostri intrecci spezzati inariditi restano
sepolti da terra sterile./ And our dried-up
broken weaves remain buried by barren
earth.
Nulla può rinascere dove l'uomo in
barbarie spezza./ Nothing can be reborn
where the barbarous man breaks up.
Ma il ricordi dei tuoi suoni al mattino e
verso sera / But the memories of your
sounds in the morning and towards
evening
La tua gioia quasi infantile all'arrivo della
primavera/ Your almost childlike joy at the
arrival of spring
Il canto degli uccelli tra i tuoi rami
accoglienti/The birds singing in your
welcoming branches
Sono impressi indelebili tra le pieghe dei
miei sogni/ They are indelibly imprinted in
the folds of my dreams
Un'impronta indelebile di amicizia
spezzata/ An indelible printing of broken
friendship
Dal devastante uomo senza coscienza:
solo per danaro/ From the devastating

man without conscience: only for money
Sic placet amor è ora solo un mio canto
silenzioso degli alberi/. Sic placet amor is
now only my silent song of trees.

The girl on the tree



Julia Lorraine Hill is known as Julia Butterfly Hill. She is an American girl best known for having lived in a 180 foot(55 m) tall, roughly 1500 years old California redwood tree for 738 days between December 10, 1997 and December 18, 1999.

Hill [lived in the tree](#), affectionately known as [Luna](#), to prevent [Pacific Lumber Company](#) loggers from cutting it down.

References

- [1] Dylan Thomas, *“Under Milk Wood”*, London: Penguin Classic, 2000
- [2]https://it.wikisource.org/wiki/Trattato_de_lla_Pittura_%28da_Vinci%29/Parte_sesta_Degli_alberi_e_delle_verdure
- [3] Vitruvian Man, around 1490, metal tip and ink on paper, 34.4 x 24.5 cm, Venice, Gallerie dell'Accademia
- [4] c. 1510, Royal Library, Windsor Castle, red chalk on grey-brown paper, 17 x 28 cm.
- [5] <https://www.ancient-origins.net/>
- [6] Giorgio de Santillana, Hertha von Dechend, *“Il mulino di Amleto- Saggio sul*