

Summary

Explanation of choice of topic

As a rule, the world, including human beings, is material by nature. The ontological questions related to the definition of material and human are basically connected to artistic efforts, and lead to the questions of verity to material.

I assume that the development of sense of material is the essential message of my profession. *In ceramic sculpture, developing verity to material is the watershed that enables pieces of art to be different from sculptures in the traditional sense.*

To my mind, there is an important question associated with material: where can we get together, and whether the two of us can be combined to create a new essence. “Verity to material” in this sense is the single most important question in my personal creative work.

Definition of verity to material

According to the dictionary “An artistic quality created when the completed piece of art remains within the boundaries of the chosen branch of art and genre, while preserving the natural structure of the materials used in the creative process to the greatest possible extent.”

I find the current aesthetics paradigm problematic, because it is based on the assumption that the human is active and the material passive in the creative process. I prefer using “sense of material” rather than “verity to material”.

To my mind, verity to material is the result of the joint action of two equal materials: a sum of the essential characteristics of the culturally and biologically determined creative human and the material that interacts with them.

The manner of working a material, as well as its status and ideological loading vary cyclically *across cultures, time and space.*

The aesthetics of material use from the industrial revolution to the present day

Up until the 19th Century, the hierarchy of the materials used in the arts remained unchanged. The order of ranks was determined on the basis of economic value such as rarity, durability, the difficulty of working the material on one hand and of the economic value due to the symbolic worth of the material in question on the other. In this hierarchy, clay had one of the lowest ranks and, along with gypsum, was used for models.

At the turn of the 19th and 20th Centuries, the social attitudes towards materials started to change (with the appearance of cast iron, concrete and the so-called substituting materials such as plastics). The “international” style of using materials in the industry led to a turning point in the 1950’s with regard to verity to material.

The revaluation of shape and material had finished by the second part of the 20th Century. The hierarchy of materials was replaced by a free and unrestricted use of materials. Ceramic sculpture, suddenly springing to life in the mid-20th Century as an art that reacts to the material freely owes its existence to these processes.

The wave of liberating clay was soon overridden by the even stronger wave of dematerialisation. The current trends suggest that no “back to nature” movement is to be expected with regard to the attitudes towards natural materials and their use.

The “hundred-year” period reflects the drastic changes that occurred in the socio-cultural attitudes towards materials and their use. The current picture shows that the tendency to arrange artistic materials by theme contained the acute conflict between natural and industrial materials throughout the socio-industrial period.

The “death” of classic art

The immaterial and virtual worlds created by digital technologies in this information society of ours, fundamentally rearranged the world of art by the end of the 20th Century. It seems Hegel’s statement will be confirmed, and art advances through the possible path of self-fulfilment through the phases of self-discovery, similarly to “Spirit”. Since it has concluded its own development, it turns into a science, with the task of performing an ontological examination on itself. This will shred the last connections with the social responsibilities of its aesthetic functions.

The success of programs has been evident since the beginning of the last century. *The “death of art” is a fact that refers to the current status of “language” due to historical and cultural changes.* The changes of language can be best demonstrated through the “algorithm revolution”. Algorithms are used in a concrete manner to create computer programs through coding.

The intuitive utilisation of algorithms in analogue arts leads to the manual action of programming: operation command, interactivity and virtuality. (Peter Weibel)

The use of real objects leads to the birth of new concepts in art, those of use and the user. The instructions for use become a manual for those wishing to enjoy a piece of art, turning the spectator into a participant and later, to a component of the content.

Society creates the era of “everyone is an artist and everything is a piece of art”. Gradually, sculpture also abandons the idea of reflecting the world through “artisanship”.

In the brave new world of supplying stars, the artist uses humans to create material humans – household celebrities.

The current situation of clay working

Between the 1950’s and the 1980’s, the clay liberation movements took place in the field of clay working. But before the genre of ceramic sculpture reflecting the material could assume its rightful place, that very place seems to be vanishing.

The current predominance of virtual and immaterial art questions the position of any traditional manual art form.

My only hope is that the wave of dematerialisation will gradually strengthen the need for a way of life more closely connected to the earth. The tactile information of clay and the physical cooperation with fire bring to the fore the long-forgotten connection of our ancestors with natural elements that lies dormant within us.

“Consumer art” has a special way of leaking into the field of ceramics. The leisure ceramics movement that has developed in the past decade is the consumer market where the professional artist is a facilitator of becoming a star.

The material culture of professional pottery has lost its concrete social functions. Due to the general crisis of “artisan” sculpture and since clay had a less than prestigious status to start with, it has become a self-reflective genre. In this case, “Hegel’s prophecy” is definitely coming true.

It is in this sense that I will define and outline below the alternative I think is acceptable in the current situation.

My research areas

- An alternative of clay working may be the ontological examination of material, focussing on “modelling the nature of matter”.

- Within the framework of self-reflecting, studying the material in a fashion that goes beyond the aesthetic issues of “the nature of matter” that appear on the surface of culture.

I have selected the following themes:

- evolutionary issues connected to materials
- connection between mind and other materials in the creative process
- observations related to the living nature of clay
- possibilities of expressing fractal systems with clay

- the aesthetics of *wabisabi*, based on continuous transformation and change

These themes reflect my own sense of material.

“Evolutionary issues” connected to using materials

I feel everything assumes a structure and shape that allow it to adjust to changes and hence continue to exist. This is a characteristic common to everything, a general “will” that aims to preserve matter. Therefore, whenever I say “matter”, I am also referring to “life”, and *vice versa*.

The great variety of ways in which material is organised is due to its sensitivity to starting conditions, which is operated by the “random” order of chaos. The random processes determined by the starting conditions are present in the evolutionary development of living beings. The fundamental rules of human behaviour also follow the universal laws of how matter works. (Sociobiology/Wilson, 1975, *Génevolució és mém metafora*/Dawkins, 1986 and 2005)

Genetic information is the only kind that triggers evolution by means of natural selection, which is transferred between generations. *Genetic information is not matter but a shape. A shape in which substance survives because it can be copied.* Evolution may start if the prerequisites of copying genetic material are met. In the case of clay, the preconditions of copying are, at a rather rudimentary level, given.

A structure is required to create any form. During the constructive process, things that cannot be seen or are not even present in the final outcome are often used. In the mass of matter, crystals and bound water are elements of the structure that are invisible to the naked eye. The ability of clay minerals to construct themselves can be compared to the construction of a primitive machine. They are made of what is available on the ground, and operate following the principle of least energy consumption.

Crystals construct themselves by copying their fundamental particles. It can be assumed that in certain cases, crystal growth involves the copying of complex information. The ability of matter to replicate itself lies in its crystal structure. Crystals multiply and mutate. The plasticity of a material depends to a great extent on the direction of travel of mutants travelling within the crystal structure. (L. Tarassow. 1999. p79) This may be one of the reasons behind the “shape selection” of clay.

As a result of the strong “selection” pressure, the “typical shapes” associated with clay are organised along similar cultural and thematic trends. These tendencies have

remained unchanged for millennia regardless of the geographic origin of the object, its age and cultural differences. The use of clay is also focussed on a particular theme in the field of plastic ceramics. The boundaries, however, are loose: the effects of pressure and the biological characteristics of growth. Clay reacts poorly to Euclidean shapes, and transforms them according to its own needs.

Perhaps evolution may be used as an analogy for the world of human-made objects.

If sensitivity to starting conditions starts a predetermined series of random events in matter organisation, there are also replicating units of human thinking and creative processes based on “predetermined chance”. If through the cultural gene known from socio-biology, the “meme” as defined by Dawkins, conscious actions can create self-replicating units, then the same applies to the world of shapes.

There may be self-replicating shapes associated with each material.

If every material assumes a structure and shape that promotes its continued existence, then thoughts also suggest such forms. Intuition may help tune in to the self-replicating characteristics of matter, and express those in shapes. The material has to respond similarly to the shape suggested in the work process.

In this sense, I consider material all objects in whose final form self-replicating units of both the creator and the material being worked survive. An infinite number of forms may “mutate” in the course of the “replication”. If the structure of matter can survive in a shape, the “mutation” will result in a object that is true to the material.

Works of art replicate in the sense of content. The evolution of information is evident in the independence and effect of the creative process.

In my experience, everything follows these rough principles. Anything can be created, but only those objects survive which inherit the self-replicating characteristics of matter. Our minds are also subject to this law.

The issues of thinking with a verity to material – the mind

The problem of *qualia*, i.e. of experience and impressions, or the asymmetry of the subjectivity of the “I” viewpoint and the objective perspective of the third person singular is a yet unsolvable conflict in consciousness research. (Ferenc Altrichter, 2001) This is the domain of art. Artists work with *qualia*, and works of art affect *qualia*.

I consider human consciousness matter. In this sense, sense of material quality is created by the correlation of two materials. To my mind, in this process information is transferred regarding material being in general, and also regarding the specific being of the participating materials.

Thinking with a verity to material is a lot more than the visual perception and showing of natural materials. Our knowledge of the inner characteristics of the objects transcend its image.

The concept of verity to material is developed in making internal characteristics visible. Making internal characteristics visible may lead on to a series of thoughts and actions one may even call metaphysical, where visual and physical connection with the other matter may create a transcending resonance relationship. You could call this a sort of inner sight.

I believe inner sight is a relationship between the forms of expression in matter that cannot be explained solely by causal transmission of information.

I assume that there is non-causal transmission of information between expressive forms of matter, and this phenomenon is related to the complementary principle.

Quantum physicists address the issue of the complementary principle in connection with the dual nature of matter particles.

According to the Copenhagen Interpretation of the complementary principle (Niels Bohr), particles are, when not observed by humans, in a superposed position, whose location can be expressed by a complex condition function. When an particle is being observed, the function collapses, and is replaced in the physical world by the real and objectively experienced particle. This phenomenon only exists in micro conditions.

The essence of the question is: to what extent is the physical world independent from the human mind. Although this question cannot in practice be answered, it concerns the very foundations of creative processes.

According to Roger Penrose (Blackmore, 2007. pp244-257; Héjjas, *no date*; Héjjas, 2001; Héjjas, 2005), it is probable that the synapses of neurons in the brain are in the size range where a wave function may develop. When synchronised wave functions collapse, creative ideas and intuitive insight spring up in the mind. According to this assumption, the mind is one of the basic units of the universe. It is a part of reality just as much as spin, matter or electronic charges.

I think the verity to material developing in the process of making internal characteristics visible is similar to the interference of waves. When two wave crests meet, a bigger wave is created. When a crest and a trough meet, the wave is cancelled out.

The “message” expressed by a good work of art is the information generated jointly by the materials participating in the creative process.

When thoughts and matter meet in constructive interference, the object created will carry a dual quality true to the material. The analogy of interference is taken from quantum physics.

Sense of material in clay working

The increase of virtualisation may strengthen the desire for tactile, weighty and impenetrable experiences. Clay work is the original opposite of dematerialisation.

Clay enables concrete learning through the senses. No other material offers the same sensation. You must dip into and knead clay.

The art of ceramics is an empirical dialogue with natural sciences, a guardian of experience and tradition accumulated over millennia.

The work processes and tricks of the trade were already known in the stone age, and although the technology has become more sophisticated, the bases remain unchanged to date.

The knowledge of how to create matter that becomes rigid in fire dates back to about 25,000 years ago (Gustav Weiss). The pottery culture of the Neolithic age, the “idols”, anthropomorphic, i.e. human-shaped pots are associated with the theme and importance of containing, or the containing of life. Pottery has preserved this theme to the current age.

In order to contain, the object must have a cavity. The priority of the cavity, the expression of a pocket using a wall or a shell structure is one possible way of approaching thinking with a verity to material.

The objective expression of containment, whatever its external shape, is an expression of verity to material.

Pottery is in a privileged situation because it has preserved the archaic function of containing that preceded “high” art: this may be serve as the basis for ceramicists’ thinking with a verity to material.

Transformation, change, the preservation of the conditions of a given state can be considered as the “original theme” of any artist working with clay.

Clay has, since ancient times, been inseparably associated with certain archetypal experiences. A long-forgotten sense of reality that is still present in our guts, the belief of the Neolithic human in a cyclical world is still present in clay. Dipping into or kneading clay are in themselves archetypal experiences, and may bring subconscious processes to the fore.

Although the objects made of clay are profane, I feel good clay work does have a sense of material of “archetypal sanctity”. It surfaces in the creative process through typical clay themes and shapes.

It is present thanks to the archetypal elements that participate in the work process. Earth, water, air and fire are parts of myths as much as the physical components of the work.

In my interpretation, the ancient sanctity is the knowledge that “everything is connected to everything else”. A number of discoveries in the natural sciences also point in this direction. Meditation helps reach the same experience.

Verity to material based on the “living nature” of clay

There is something “extra” in clay, which the ceramicist can feel. It seems to have a memory. Although it is not classified as living matter, clay does have a living nature. It is characterised by individuality, a dependence on water, and energy transformation. I base my creative work on these characteristics.

Constant physical and chemical changes to the original rock, and the dissolution of minerals created from fusion on the surface lead to the creation of continuously changing and dispersed systems considering (their grain size and chemical structure), i.e. clay minerals. The behaviour of clay reminds of its creation.

The “amorphous” mass of clay hides a real crystal structure, whose lattices are stretched by water molecules. Energy flows in this structure in a way that hold the “mass” together. The difference crystal structures of clay minerals affect the characteristic that is most important to us, namely the water absorption and rigidity of clay.

There are claims that clay minerals may have been the “cradles” of life. A. G. Cairns-Smith assumes that the flaws in the crystal structure of clay multiplied when layer minerals (kaolinite, illite) crystals grew, and were copied, basically as inherited information (a phenomenon mirroring evolution).

One of the ways to characterise clay minerals is the water contained in their inner crystalline structure. Presumably, the water was pressed into slate when mountain ranges were pressed together and moved, and as a result the alkalis and silicon acid were released. (Source: Weiß, Gustav, Neue Keramik, 2007/5. 38.)

The surface tension of water holds together crystals in clay, and the capillary effect holds together the whole chunk of clay. Water also contributes to plastic rigidity (density), which turns into bending strength on drying. *There is no clay without water.* There is no life without water, either.

The medical procedure known as homoeopathy is based on the ability of water to transmit information. The information copied into the water is used to eliminate the symptoms of the poison that causes illness.

The assumed ability of water to receive and transmit information may suggest that the water locked in clay's lattice and added to it during the work process contributes to the "memory" of this material.

I assume that by using the living characteristics of clay I can create a world of forms that is true to the material by "modelling" organic or inorganic growth systems.

I think the moving and potential mutation of crystal lattice layers requires wall structures that enable some sort of free energy flow.

Shapes must enable the movement of a lamella structure within the constraints of the shape, and the flow of water through the capillaries.

Arched or sectioned shells absorb the tension generated by the loss of the lamella structure and the water content, and therefore enable clay lamellae to adapt to the new shape. *This is why I consider the working of clay to create a cavity true to the material, including structures using walls or shells.*

Clay is capable of reflecting the impact of natural forces (erosion, eruption, structures created by watercourse, lava flows).

It is equally suitable for creating shapes that demonstrate the phases of both perishing (wrinkles, creases, broken shapes and surfaces) and of growth and development (tense arches full of life, relations of tight form springing from each other as seen in the world of plants, opening shapes resembling budding and blossoming).

The transformation of clay enriches pottery with the great mystery of fire.

The chemical characteristics of clay minerals are in harmony with the ancient and most important sacred function of carrying and containing life.

My aesthetic perspective - *wabisabi*

Although both Zen and the aesthetics of *wabisabi*, which springs from it, are both typically Asian phenomena, their message sum up my own mission, vision and sense of material very well.

The constant presence of *wabisabi* has had a direct effect on the development of pottery, and indirectly on the entirety of artisanship (tea ceremony). The spirit of creating ceramics continues to be the sense of material of *wabisabi*.

Wabisabi is a type of thinking while remaining true to the material based on fine balance. It signifies the beauty of imperfect, impermanent and incomplete things. It signifies the beauty of modest and simple things. It signifies the beauty of unusual things.

This worldview is a complete whole. According to the spiritual knowledge of *wabisabi*, the universe as well as everything within it are constantly in the never-ending phases of existence and perishing. Particular points or times in this process are often considered final and completed. But it is impossible to know when something will reach its completion as destined by fate. Beauty is not an objective feature but rather the result of a process of *dynamic perception* that happens between us and an object.

The wabisabi attempts to point to the finest areas, mechanisms and drives of “presence”, and go beyond everyday sensations. The materials that objects are made of may bring these feelings to the fore. The manner of use, such as how clay cracks and wrinkles, can evoke similar moods. Physical forces and deeply rooted formal structures reveal the cosmic order.

Objects are the expressions of frozen time and movement. They should be made of materials that clearly show the effects of weather and human effort.

Emphasising things by minute signs, removing them from a previous state by effecting subtle changes – considering constant transformations and changes is what my own sense of material is about.

My chaos – attractor – fractal – sense of material

My close friendship with science dates back to 2000, when I read a book on chaos theory (by James Gleick). I felt I was reading about the scientific confirmation of *wabisabi*. The suppositions of metaphysical thinking exist in a ubiquitous process that can be described using mathematical formulae.

Current scientific theories picture matter in a way where the explanation for behaviours on the macro level are hidden in the unfathomable micro world.

For forms that change in time and space, dynamics appears to be fundamental.

Nature creates a number of patterns. Some of these are organised in space and unorganised in time, or *vice versa*. Some patterns have similar structures on a variety of scales. Others have permanent, again others oscillating conditions.

I believe the secrets of “verity to material” are hidden in the various dynamics of patterns.

Chaos theory concerns itself with the lack of organisation as it appears in various fields of life.

Chaos is a recently discovered but ubiquitous class of natural phenomena. Chaotic behaviour appears in simple, non-linear and deterministic systems as objective chance.

A minute difference in the input may lead to vast differences in the output – this reflects a sensitivity to starting conditions. The system is self-organising.

Eastern philosophies do reflect chaos. The movement of the Dao, the existence of Zen express the state of continuous movement.

The geometric expression of chaotic states is the *strange attractor*. Dynamic movement is shown on the screen as a flexible map of movement. The attractor is a geometric form that shows the long-term behaviour of the system.

Fractals are chaotic attractors with a broken dimension, signifying a mathematical structure or curve with a non-integer dimension. *They are self-similar, repeat their structures, and any small part of them are of the same structure as the whole system.* (B. Mandelbrot).

My objects and sense of material

I am awed by infinite complexity, often embedded in itself, and the repetition of structures on an increasingly fine scale intrigues me. *When constructing my objects, the basic characteristics of fractals are before my eyes, specifically self-similarity, which also means the symmetry of different size scales. I hope to use fractals to express the inner characteristics of clay on the outside.*

Due to the fractal system, joining materials is not always possible in the small scales. *Therefore I abandon the traditional forms, defined by closed clay walls, and seek to create loose connections between walls.* I assumed clay was happy with the fractal-based and loose system of connections. Its lamellae are free to slide, and there is room for structural movement.

The self-similar system of clay crystals, the emergence of chance mutations makes it evident that I can use the inner structure of clay as my model. Therefore I am trying to create “free fractals of the order of organisation in clay crystals and the DNA molecule”.

“Fractalising clay crystals” has led to the creation of hexagonal systems. Contraposed zigzag clay coils have been connected into a continuously growing wall. It was during the even distribution of nodes that I realised that there are nearly innumerable paths in a three-dimensional fractal system. I have yet to explore these variations.

Chaotic systems are sensitive to starting conditions. Therefore I abandoned the flat starting plane. If the starting position is a three-dimensional curve, spatial proportions can be preserved despite the repetition, planes will tilt depending on the original position, and after a sufficient number of repetitions, the self-similar units will be symmetric across the various scales of size.

The unity of the human body spans across various scales of size, and uses the structural basis of the fractal approach, namely branching, to reach across the entire system. I used the human body as my model when implementing the rhythm of changing sizes in self-similar units, and branching in my works. In addition to vertical shapes, I am trying to use networks that can expand in any direction in space. *I am seeking the solutions that result in an infinite series, which may cease to exist through the mutation of shape.* In the “Gil-galad” series, I managed to create networks of distribution systems from a central core.

The claim made by A. G. Cairns-Smith that clay minerals may have cradled life, motivated me to “try” porcelain in a double helix. If it does not fall apart, the assumed relationship may just be true. These works include the hexagonal structures comprising porcelain coil spirals (Helix series). It never ceases to amaze me when these simple repetitions assume fundamentally organic shapes.

Chaos theory has changed my perspective and works. I have understood that clay reacts well to instability because it is unstable itself. I realised that self-similar systems and structural repetitions may reduce drying and burning problems to the minimum by minimising the energy tension present in the material.

Clay is a dynamic material, as its lamella structure and the water locked within keep it in motion. This moves and rearranges during drying and burning, too. The key to non-linear dynamics is the fractal structure. It seems evident that these two should be coupled.

Self-similarity has a universal effect. The ability to view the entire picture. The scientific recognition of this fact leads, paradoxically, to the naïve concept of self-similarity, which characterised primitive cultures. Harmonic balance between order and disorder creates a sense of beauty in humans as expressed in natural objects. These have the shapes of frozen dynamics, an idiosyncratic mixture of order and disorder.

There are also invisible forms in nature – the hidden shapes of the structure of motion. I would like to explore these for myself.

As for clay, I assume that the optimum sense of material demands shapes that have optimum distribution of energy. Either the object allows for the open flow of energy, or the paths are in a state of balance.

The crystalline structure and water content of clay affect the shapes that can be assumed, and this is why clay enjoys the forms of the “living world”.

I believe clay has a “memory” that leads it back to shapes similar to the original crystal structure. Therefore, although at a different level, it can return to the “starting position”, the bumpy and creased state that it experienced at its creation.

The structure of grains of clay is a unit that has to be replicated. The ability of clay to remember is a kind of finger-post pointing at certain shapes, defining the possible shapes that are capable of survival and development.