1. Introduction

The experiences of people with sight loss and sighted people are different, though cognitively they follow the same basic rules. For this reason, it is essential to find effective research strategies to arrive at the same disciplinary ends. Thought processes are surprisingly adaptable to circumstance, if well-tuned, and blindness does not preclude the possibility to engage in reasoned discussion on the cognitive functions of Aesthetics. Emmanuel Kant attributed such greatness to the human mind as to transcend the cosmos and to aesthetic experience the ability to imagine and rethink reality, to the point of extending its horizons. Aesthetic experience is indeed founded on the intellectual processing of data emanating from hedonistic pleasure. In this sense, it is worth quoting an expression of Aldo Grassini (2006: 41), founder and director of the Museo Tattile Statale Omero in Ancona: “image is born in the senses but its beauty is illuminated in the intellect” (our translation). Thus the image activated by the senses is the starting point for a vision which gradually expands and deepens. Painting impacts on the visual, music impacts on the hearing. Literature comprises sounds and graphic signs and when sensory data is missing, for example in the description of works or landscapes, we have to rely on memory. On the contrary, the aesthetic experience is amplified through evocations and reminders of already experienced phenomena. It can therefore be deduced that aesthetic experience is a mental and conceptual, as well as perceptive, phenomenon. Enabling a blind person to feel an aesthetic emotion means having him/her process all the concepts represented in the artistic artefact: structure, form, subject and, where possible, colour. Aesthetic experience is essentially connected to the mind, while sensorial perception, though a necessary condition for producing mental images, is not in itself sufficient. In fact, without the support of the word, it cannot provide an extensive vision of form or meaning. But it is worth remembering that for a complete knowledge of a phenomenon, its description, however accurate, cannot replace its physical perception. Gotthold Ephraim Lessing in 1766, in Laocoonte (Lessing, 2003), reminds us of the fundamental role of the word – ever more so when expressed poetically – in freeing the mental imagination during the enjoyment of a work of art. Given the aforesaid, the bond between the senses and the intellect, that is between perception and cognition, image and word, touch and hearing, body and mind, would appear essential (Gregory, 1966; Dellantonio, 1993).
2. Critical issues: communicating metaphor with particular regard to the blind and sight impaired

The metaphor, implicit in poetic language, has in itself a cognitive value. If that value is able to enliven *ex novo* or bring to mind an aesthetic experience, it is useful to retrace some past thoughts on the subject. The decisive aspect of the word, associated with a real image or one that can be sensed, is the primary quality of the metaphor as a vehicle for the transmission of wider reasoning and subtle interpretation, which require the use of the highest faculties of the mind. Metaphor (from the Greek *metaphero* “I transport”) is a trope, a rhetorical figure implying the transfer of meaning, and occurs when the term which normally occupies the place in a sentence is replaced by another whose essence or function takes over that of the original term, thereby creating highly expressive images. The metaphor is not totally arbitrary: generally speaking, it is based on the existence of a relationship of similarity between the original term and the metaphorical term, but the greater the evocative and communicative power of the metaphor, the more the terms of which it is composed are distant from the original semantic field. Allegory, on the other hand, is the rhetorical figure through which a concept is expressed via an image: as in metaphor, there is the substitution of one object for another but, in this case it is not based on the emotive plane but rather requires a rational interpretation of what lies behind it. It thus operates at a higher level with respect to the visible and the initial meaning: allegory often leans on philosophical and metaphysical conventions. Analogy too, in rhetoric, is seen as combination and comparison, within a written or spoken book, of two or more words in relation to their semantic similarity (that is, words with similar meanings). This is a characteristic instrument of philosophical or political oratory, but it guarantees that the supposed similarity between the two words corresponds to an effective semantic correlation, if not precisely that which the orator wished to instil in the minds of his listeners. Analogy is in fact used in the place of metaphor in various poetic contexts, including those produced by the futurist poets last century. Analogy is therefore seen as the combination of two images, situations or objects in a relationship of similarity or identity. Metaphor, on the other hand, has no precise cognitive plane of reference and for this reason it is defined as a rhetorical figure of thought. This is the strength and the risk in the use of metaphor, especially in the case of congenital blindness. In the absence of cognitive support, it needs to have acquired the passage from concrete to abstract thought and from abstract to symbolic thought. It is worth considering that, at a deep and more intrinsic level, language has been defined by many philosophers as a symbolic activity, that is, an action that does not imply a logistical or utilitarian conception (something that mirrors reality and serves as an instrument of communication) but a much richer vision, according to which, linguistic activity appears to be the creator of “symbolic forms” equipped with their own dynamism and cognitive value and not merely reduced to the simple practical needs of transmitting useful information (Cassirer, 1961).

It is difficult to know which field metaphor belongs to: linguistics, semiotics, aesthetic philosophy or psychology. Current research still centres on a question that seems to have no precise answer: not so much the effective realisation of sense, but the “place” and the “means” of sense, that is the language or the text, the image or the mind of the interpreter. In 1893, in *Meaning and Metaphor*, Victoria Welby maintained that much of what is defined as literal contains rhetorical figures which are not always easily recognisable. Every sentence contains at least some metaphorical element and thus, literal expressions simply have “less metaphorical value”. For the American philosopher Nelson Goodman (1976), metaphorical language blends with literal language in reality, but remains separate and autonomous from everyday language because it is a “deviation from the norm”. For Umberto Eco (2013), the difference
lies in “additive” knowledge and “substitutive” knowledge, between substantial and formal logic. In “additive” knowledge, the metaphor, especially if used creatively, not only embellishes the proposition but adds to the content. The principle of “transfer” has almost always been behind the theorising of metaphor, but this has not compromised the view that this most important trope is also able to produce “rapid learning and knowledge”. Nonetheless the US philosopher Donald Davidson, in his studies published in the 1980s, denies the cognitive value of metaphor, maintaining that anything described by metaphor has no other meaning than that expressed literally by the words. On the other hand, according to the Anglo-American philosopher Max Black, one of the most important exponents of analytical philosophy in the 20th century and who also made scientific contributions to the philosophy of language and art, metaphor actively engages the listener who is invited to give a “creative response” and to reorganise and redefine knowledge of the object. To this end Black (1983) provides the example of the metaphor used by the French philosopher and scientist Blaise Pascal of man as a “thinking reed” indicating both the fragility and the elasticity of human thought (Pascal, 1670/1994: 132). Such a powerful definition is easily understood because it embraces two aspects perfectly associated with the human condition and the things that represent it, something that no literal translation could achieve so creatively. A successful metaphor therefore creates new analogies and similarities and enriches the utterance with additional meanings which can lead to increased knowledge. Black (1983) also maintains that metaphorical thought and expression can sometimes generate intuitions that cannot be expressed in “any other way” and even generate intuitions as to “how things are” in reality (Black, 1962: 123).

One can agree or disagree as to the value of metaphor and also whether anything can be explained without using metaphor, but there are cases where a merely literal description is unable to provide extra meaning. This is particularly true when we try to express emotional states and atmospheres which require a correspondence between cognition and emotion. With metaphor what we get is the unusual but exact correspondence between normal thought and profound intuition. It is something that ordinary, consolidated and pragmatic language cannot always achieve, but which an evocative and poetic language, even if synthetic and concise, almost always achieves. This is, for instance, the basic characteristic of the association of ideas determined by the reading of certain poetic Japanese haiku components and also some 20th century hermetic poetry. Here, synthesis wedded to the immediacy of perception creates amazement and a perfect adherence between an individual feeling and a shared feeling, an atmosphere that is perceptible and somehow representable only in non-ordinary form. The personal and social risk effected by the ever more widespread lack of imagination leads individuals to simple, stereotyped forms of expression. It is therefore crucial to reconsider the balanced relation between verbal experience and the direct experience of reality, with a focus on the power of sensorial education. This in fact enables us to develop those imaginative faculties which have been inhibited by the diminishing of perceptive quality and cognitive learning. This can happen if these latter do not get altered by the interpolation of thought and action, imagined experience and lived experience. Only in being able to say what one has achieved though doing can there be liberation from verbalism, and not only in conditions of physiological blindness. This criterion is valid for all-blind, sight impaired and sighted people. The oriental, specifically Japanese, culture splendidly defines this in the educational terms Waza Gengo, that is, in an attempt to translate: a teaching whose technique is a mix of competences involving mind and body. In this dimension, an intuitive approach is required, sensitive to the metaphor embedded in good practice.

According to philosopher Bryan Magee (see Magee & Milligan, 1997: letter no. 3, pp. 24–41), language is not only a set of propositions, but also a set of metaphors leading to new
meanings and new ways of being, namely that cluster of behaviours, feelings, actions and culture that language underlies. Indeed one of the qualities of metaphor is that of being an element that, while describing a concept with approximation (metaphorical language is not technically or scientifically exact), fits perfectly with the natural behaviour of the phenomenon described and thus benefits our imagination, stimulating wider interpretative competences, thereby enabling us to understand the world around us. The fact remains, however, that communicating metaphors to blind people, especially if congenitally blind, implies an attempt to translate content that would otherwise seem volatile. Communicating metaphors to blind people requires the deconstructing and reconstructing of the complex system of association of ideas which lies within the very mechanism of the metaphor in contexts of life experience and according to comprehensible variables. This mental exercise is an integral part of being human. Not considering that metaphor has a value, cognitive or conceptual, means the negation of thought. It is true that ideas are not rendered explicit by metaphors, they are merely suggested and our minds are therefore obliged to interpret and to imagine. This is a faculty that man possesses and has achieved through the ability to create verbal images and visual words, the perception of reality and its conceptualisation, that is through the intellectual elaboration of percepts according to analogical and anagogical mental processes via an interpolation of experiential and propositional knowledge.

3. “Ut pictura poesis”

According to a famous saying of Simonides of Ceo (VI – V B.C.) “a painting is a silent poem, a poem is a speaking painting”. The theme of the relationship between the two forms of art, pictures and words, is found in another rhetorical tract, Progymnasmata (Preparatory exercises) attributed to Ermogenes of Tarsus (II A.D.). Here, ἐκφρασις is defined as “a descriptive discourse which effectively places the object under the eyes”. The features of a description, intended as a means of visual representation, include “people, moments, places, times and other things”. Ἐκφρασις was of interest to the ancient world and not only as regards literature. The description of places, arms, objects, events, public ceremonies, religious rites and people form a precious mine of information which scholars have long studied in relation to topography, art history, physiognomy and antiquarian studies. Ἐκφρασις has always meant elegant description: famous examples include the description of Achille’s shield in Homer’s Iliad and Aeneas’s shield in Virgil’s Aeneid and many passages from Dante’s Divine Comedy. Ἐκφρασις is also a description of the visible in words as explained by Umberto Eco in Dire quasi la stessa cosa (2013) (literally, saying almost the same thing, published in English with the title Experiences in translation). But the Latin quotation Ut pictura poesis formulated by the Latin poet Quinto Orazio Flacco (I B.C.) translates literally as As in painting, so in poetry, that is “painting is like a poem and a poem is like a painting”. The poet explains that one type of poem is better viewed up close, while another from a distance, or viewed a second time, or analysed with a critical eye, as is the case with paintings. The connection between poetry and painting has been debated since ancient times. Horace in his Ars Poetica, a fundamental reference for the philosophical and historical discourse on Aesthetics, shows how in poetry and in art there exist works which are immediately understandable and others which are more difficult to decode. Translating a literary text into a visual text was the work of those erudite Renaissance and Baroque artists who aimed at conserving the principle of aesthetic equivalence, preserving the expressive power of the original language in the knowledge that it would undergo a transformation but not a loss of its original meaning. The translation would however impose adaptations that could at times belie the imaginative power that the per verba description
might generate in the reader. Establishing the level of correspondence between text and image is an arduous task. Every time we try to reproduce a poetic text in image or tactile form, we notice how the narrative and evocative force of the author undergoes a transformation that risks reducing its meaning. If, however, we accept the principle of aesthetic equivalence, that is the transporting of the content of one aesthetic context to another, then we can embrace the concept of functional adaptation. The diversity in languages should not create confusion. The relationship between two text types is sometimes a philological restitution of a story. At other times, it is an evocative call to the symbolic meaning of a story which, reproduced as an image, is a condensed version transformed on a semantic and stylistic model to which it must respond. Something extraordinary happens when we read a myth described in Latin poems. Consider the epic poem *Metamorphosis* by Publio Ovid Naso (I B.C. – I A.D.) in which all the episodes have their origins in one of the five great forces that drove the ancient world: love, ire, envy, fear and the thirst for knowledge. No action, either on the part of gods or men, cannot be traced to these invisible forces.

3.1 The role of words and silence in the learning process

In blindness, silence is like an empty space, therefore the human voice connects blind people in unexplored spaces to the speaker, who becomes a reference point and helps them give a new meaning beyond the denotative meaning of space. In blindness, the word facilitates the understanding of the reference. There are many nuances in the articulation of a discourse and in the tone of voice which affect understanding in a shared dialogue. Thus the voice, with its particular resonance, requires modulation, not so much and not only to provide the listener, especially the blind listener, with a pleasant sound, but rather to ease the understanding of the nuances of the spoken word. Silence is a place for transformation: it enables us to contrast psychological blindness and forms of egocentrism, so long as the quality of that silence enables us to process experience, knowledge and memory and allows us to experience this silence as presence, not as absence or indifference in relation to that which, though not immediately visible, exists outside of us.

One of the most difficult things to sustain between blind people, but also between sighted people and blind people, is prolonged silence, especially if such silence is not intentional, reassuring and therefore motivated. In the same way, a too-loaded description can be misleading in a constructive dialogue if it lacks precision and punctuality. A shared dialogue needs to trigger mutually imaginative processes in order to contrast verbosity. Sentimental and spontaneous dialogue, on the other hand, is like a breath of fresh air, equally essential and gratifying.

The description of phenomena is therefore an absolute necessity, especially in dialogue with the sight-impaired, and must therefore be highly informative and exploit the evocative function of the word and the use of metaphors closely connected to knowledge of the phenomena examined and expressed through analogy and abstract imaginative processes. For example, if we describe the smile on the face of Leonardo da Vinci’s Mona Lisa to a congenitally blind person, we do not just explain the position of that smile on the face, the shape of the lips and the shadows reflected from the cheekbones. We must provide a faithful translation of this smile and compare it to a real smile and the state of mind to which it might correspond. It is not a question of immediate or mechanical cognition. It is a question of a complex Gestalt consisting of information known and not known, perceptible through sensorial integration and the intellectual elaboration of tactile, philosophical and psychological data. All these elements contribute to the construction and the meaning of such an aesthetic image and thus to the understanding of a complex reality to which the work of art refers. As
often happens, Special Needs Pedagogy concentrates on the focused use of perceptive and cognitive faculties when a deficit is in place. This pedagogy should therefore be considered a search for efficient and effective learning models aimed principally at the sensorially disabled, but in fact useful for all.

### 3.2 The cognitive function of touch

There is something concrete about thinking visually that manifests itself through a synchrony of utterance, physical perception of form and assimilation of content. This produces a more complete understanding. Touch is commonly considered a realistic sense, concrete and sequential, which gives us information about the density of a substance and the temperature of a surface, about the size and weight of a solid body. Considered the first and the last of the senses we feel in the world, touch is a constant mirror to perceptive behaviour revealing significant psychological aspects of our being. Having tact means, in current use, practicing the art of sensitivity, acting discreetly, being able to handle reality with delicacy and finally seeking in contact the same sense as listening. Touch (the Italian word “tatto” means both tact and touch), from the scientific viewpoint, is an invasive sensory modality which achieves its aims also through muscular action, as explained by Rudolf Arnheim (1994: 166–167). The organs that perceive touch link hapticity to the complexity of kinesthetic sensations within the body. That is why recognising an object and understanding its concrete representation is much easier when our internal equilibrium provides spatial dimensions such as verticality and horizontality, the back and front of an object, its top and bottom, its left and right. Within these coordinates, the perception of an object is completed by the directions towards which our torso, arms and fingers move, becoming additional tools of comprehension. Our hands harmonise our tactile stimuli through the organic movement of the joints. Our vision, on the other hand, can be partly integrated with tactility only through this plurality of senses. The similarity between tactile and optic behaviour calls for an accurate examination of the compensatory processes of the human mind, especially when vision is replaced by this integrated use of the senses. This study is based on similar perceptive modalities, which elevate the complicated phenomenon of vision to the level of consciousness. Vision here is intended as selected strategies of sight, which translate into selective strategies of touch. Since there is a tactility of the eye, as maintained by the Theory of Art between the 19th and the 20th centuries, it could be said that there is an opticity of touch, now considered very important in the pedagogy of the arts and in the psychology of perception. Just as our sight allows us to redraw an image by perceiving outlines, surfaces and volumes, our hands enable us to understand composition by touching physical lines, surfaces and volumes, facilitating our understanding of the aesthetic value of a concrete form. Nonetheless, everything that is perceived from vision, be it from sight or from touch, is always processed by the mind and through the connection of sensory perception and common knowledge. The act of seeing is never the product of a purely retinal or solely haptic stimulus. In the absence of sight, the quality of perception consists in an effective integration of the residual senses and it is thanks to the synergy of sensory stimuli, cognitive functions and the intellectual processing of perceptions that the internalisation of the form and content of images is achieved. Direct contact with the physicality of the form and with the representative power of the word that describes it, are also necessary. The appropriation of the sense of the form depends on the inner vision of concepts and on the interpretation of that which, experienced through the senses, is learnt cognitively. For this reason, a refined sense of acquired knowledge is required. Symbolic thought is thus based on an extension of a purely perceptive experience. Thus tactile perception is an essential source of knowledge.
for a blind person. It is capable of replacing the visual function, provided that it is interpreted in a broader and more articulated sense than it is by sighted people. In fact, while for sighted people touch is often just an appendix to sight, for blind people touch has a typically gnostic function. As such, it cannot consist only of contact and prehension, but it has to become an active, systematic and intentional tactile exploration. This rigorous mode of touching is known as haptic exploration and implies that the organised movement of the hand on the object to be discovered is the fruit of a harmonious coordination of the two hands, replacing the normal hand-eye coordination, which is the competence of sighted people. Such tactile perception provides meaningful information on the shape, size and position of actual objects and on their weight, texture and type of materials they are made of, giving the blind person the possibility to access essential sensory data and to create mental images of the object and its representation. Haptic exploration takes more time than visual exploration; it is demanding on a sensory, perceptual, attentional, mnemonic and mental level, because “seeing with the hands” requires a series of perceptive actions that are then synthesised in a holistic representation. It is worth recalling that tactile perception does not rely only on the hands, even though this is certainly the most refined tactile organ; in particular the fingertip, for example, enables an effective reading of the Braille alphabet. Thanks to the presence of numerous receptors distributed over the body, tactile sensitivity includes all forms of anemesthetic sensitivity (Dellantonio, 1993; Lederman & Klatzky, 1987; Mazzocut-Mis, 2002; Ouchi et al., 2006).

### 3.3 Conquering space through haptic-kinesthetic perception

Those who cannot receive spatial information through vision are able to receive it by using two other perceptive modalities: hapticity and proprioception. Haptic perception is achieved through the action of both tactile and kinesthetic receptors: the consistency of an object is perceived through touch, while its shape is perceived through the input coming from the receptors we have in the muscles of our hand and arm. Haptic perception provides information on size, shape, surface structure, movement, spatial location, material hardness, weight and temperature. The amount of space that can be observed is very limited due to the fact that we need physical contact with things.

As for proprioception, it is known that this modality, through the stimulus of kinesthetic receptors and through balance, provides information about the position of the body, its movement in space, the acceleration or deceleration of movement, the inclination of the ground and so on. For example, sensing an uphill or downhill gradient can give us important information about our position on the route we are following.

For a long time, it was assumed that people with visual impairment could not have access to certain spatial concepts but, as cognitive psychologists Ivette Hatwell (1992: 88) and John Michol Kennedy (1997) have stated, this idea was proved wrong by contemporary psychology which showed how the world of the blind is essentially not that different from that of the sighted, even regarding the question of spatial information. The difference lies in the fact that the processing and control of spatial coordinates are developed more slowly, with greater difficulty and in different ways by young blind children.

As regards perception of space, some distinctions need to be made within the different levels of visual impairment. For example, a congenitally blind person’s representation of space is different from that of a late blind person, that is someone who lost their sight in later life: in a congenitally blind person, mental schemata and representations of space are mediated by hearing and haptic perception and contain information that is appropriate for those sensory modalities. Partially blind and late blind people rely on schemata and images of space that
contain information that derives from their previous visual experience. It is clear that those who have once had experience of the world through seeing are able to activate perceptive schemata that are closer to reality, such that they provide a perception of space which is different from the congenitally blind person. Some studies have shown that there exists a different way of representing the city or more generally wide spaces, whether they are familiar or not, by the blind as compared to the sighted: the first favor geometric, regular, closed shapes such as the square and the circle, while the latter prefer irregular and open shapes instead (see Galati et al., 1992 for more details).

4. Practice

4.1 Aesthetic education at the Anteros Tactile Museum

From what has been said so far, the reasons why a new didactic and pedagogical method has been studied and applied at the Anteros Tactile Museum of Ancient and Modern Painting at the Francesco Cavazza Institute for the Blind in Bologna, Italy, should be clear. The method improves visually impaired people’s cognitive and interpretative faculties by means of an aesthetic education aimed at developing haptic skills in association with cognitive development. It takes account of verbal and gestural languages that are codified, creative and designed to take advantage of the representative potentials of the word. All this in association with iconic gesture and the visualisation of reality accomplished by touch and reproducible through mental images. The essential categories of time and space in both their constants and their variables are thus applied to images with an aesthetic value. The goal is to examine the ways through which the blind, the visually impaired and the normally sighted represent reality. These are visual, tactically readable and recognisable and aimed at making communication and cultural, scholastic, social and professional integration easier. The Anteros Tactile Museum is the result of a pioneering, experimental research project begun in 1995 which has received important acknowledgements, both in Italy and abroad, as it has contributed to developing educational museum services dedicated to visual impairment. Its collection consists of tridimensional “translations” of pictorial masterpieces from the classical to the contemporary era, designed and realised by bringing together the theory of art, the psychology of tactile and optical perception, the history and pedagogy of art, typhlology and applied sculpture. At the moment, the collection consists of fifty pieces, including tridimensional reproductions of famous paintings in prospective bas-relief, scale models, copies of Renaissance reliefs and tables aimed at the comprehension of perspective and categories of representation. Each tridimensional translation is accompanied by historico-artistic descriptions in print and in Braille which give the reader information about formal, stylistic, iconographic and iconological content about the piece, guiding them through the tactile exploration of the relief.2 The role of the guide, sighted or non-sighted, in this professional context is calibrated to the needs of the visitor, who may be occasional or regular and require a customised service which requires an accurate study of the compensatory functions of the remaining senses and of reflex, starting from a strong link between touch and hearing.

4.2 The touching of sculptures and paintings in bas-relief in order to see through and beyond aesthetic images

Being able to access sculpture and pictures rendered three-dimensionally, for both sighted and non-sighted people, means empowering the imaginative capabilities of visual thought starting
from the sensory knowledge of what is real. Art induces an extension of meaning in what we learn. Sculpture evokes in the non-sighted person the tactile uses of everyday life, but leading to a finer tactility, mobility of the fingers and the dynamism of the haptic experience, thus a physical experience and an intellectual grasp of reality gained through the body and the mind. Reading a bas-relief on the other hand, means accessing a partial representation of reality, learning the concept of partial completion, the progression from touching surfaces to geometric and perspective notions. In other words, a kind of literacy of the visual representation of reality. From a technical and historical viewpoint, the perspective bas-relief finds its origins in the Florentine Renaissance. Its peculiar characteristic is the undercut, a space located behind the profiles of the figures on the work surface, to better enable the progressive perception of touch. For this reason, the technical bas-relief, which presents picture three-dimensionally for the visually impaired, changes the representation of art from 15th century perspective painting and Renaissance bas-relief into tactile values (Gualandi, 2000). The work surface serves to calculate the depth of field of the three-dimensional painting, hence the unit of measurement of each surface depends on the style of the painting and its historical period. The realisation of the tridimensional version may correspond, in size, to the original work, or it may be on a larger or smaller scale. The measurements of the bas-relief are calculated according to the level of complexity of the artwork and its tactile readability: on a clay surface the subject’s outline is traced, followed by the implementation of material, leading to a progressive definition of shape. The creation of the prototype (Figure 8.1) is intentionally artisanal, so as to convey a higher level of sensitivity and a more refined interpretation of the image, requiring a correct understanding of the stylistic, aesthetic and volumetric values of the “translated” painting. It is also necessary to bear in mind the degree of readability of the relief, with regard to the

![Figure 8.1 Tridimensional clay prototype](image-url)
tolerable tactile thresholds common to the world of haptic perception and visual disability. The planning is in the hands of a work group to whom modelling, the psychology of perception, the history, theory and pedagogy of art and also typhlology are seen as complementary: during the construction and completion phases, the reproductions are tested by visually impaired people who have knowledge of the subject. Once the tridimensional clay prototype (Figure 8.1) has been prepared and its surfaces polished and texturized and its tactile qualities perfected, a mould of silicon rubber (Figure 8.2) is produced from which a new original will be obtained, made of white resin or alabastrine plaster (Figure 8.3). The transformation from the painting to

Figure 8.2  Mould of silicon rubber
“Ut pictura poesis”

the model image, that is from the bidimensional to the tridimensional, calls for a fine process of interpretation and transposition of the work, with regard to style, category and the rendering of space.

4.3 From reality to representation: constructing the image in the visually impaired and in the normally sighted

Educating a non-sighted person through childhood, adolescence and adulthood, must account for the difference in cognitive conditions between early blind, late blind and the partially sighted. For this reason it should be seen in a broader social context. The human mind can handle a complex Gestalt, but it cannot process all the elements it is made up of in a single move: Arnheim (1994) explains that vision benefits from a full and constant image in its visual field, but that is just the background to actual perception. So even optical perception cannot experience actual simultaneity. However, compared to touch, vision is faster, more variable and more intuitive when it comes to creating a complete and integrated structure of the image. Touch receptors ensure that tactility is always coordinated with the complexity of kinesthetic sensations within the body. That is why the recognition of an object and the understanding of its representation is much easier when our internal equilibrium provides the spatial dimensions of verticality and horizontality, the back and front of an object, its top and bottom, its left and right. Within these coordinates, the perception of an object is completed by the directions towards which our torso, arms and fingers move, becoming

Figure 8.3  New original made of alabastrine plaster

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additional tools to our understanding. Our hands organise our tactile stimuli through the organically mobile joints. Our vision, which would not have the same outcome alone, can be partly integrated with tactility only through this plurality of senses. We must not forget Pansofsky's (1961, 1998) three-step method: comprehending art through primary subject matter first, then through iconography and finally through iconology. At the Anteros Museum, this method has been transformed into a special didactics of typological arts essential to enabling the recognition of formal elements, conventional content and symbolic meanings, which are coexistent in a picture with aesthetic value. The similarity between tactile and optical behavior is based on similar perceptive modalities, which raise the phenomenon of vision to the level of consciousness. With the synchronisation of vision and reading and the synthesis in comprehension, the sighted with their optical perception and the non-sighted with their tactile perception, are able to recognise and give a meaning to the subject they experience, providing an inclusive learning opportunity in the fields of school, work and profession.

4.4 Perspective as a symbolic form

Item perspectiva is a Latin expression meaning “to see through”. For the Renaissance, this meant seeing three-dimensional space as if through a window thereby representing intuitive perspective through a geometrical and mathematical construction of depth. However, perspective is a symbolic form, in that the modes of perspective representation can be equal to the number of stylistic modes of perception and visual structuring of perspective space (Gregory, 1996; Hildebrand, 1949). The orientation of basic structures (vertical, horizontal, diagonal, zigzag, broken or continuous lines of force) already implies a perception of the profile of an extended form in itself (closed/open, stylised/naturalistic form, etc.). In the perspective bas-relief, the undercut is a unit of measurement of depth that allows for the three-dimensional interpretation of the work through a codification of planes of spatiality, benefitting the mental reconstruction of the notion of perspective space, remote or close-up viewing. But for a congenital blind person, the acquisition of the concept of perspective requires cognition of the concept of deformation and alteration of form determined by perspective vision. It is therefore necessary for the blind person to develop the notion of point of view and therefore the partiality of vision. Introducing a congenitally blind person to perspective means educating him/her in the shared codification and decoding of models of representation of spatiality and temporality and to a coherent and syntactic vision of these categories. The reading procedures for the congenitally blind are a construction, first of all of essential, flat, solid and informative geometries, then of formal qualities with an aesthetic value. This is true of every tactile perception of works of art and not only bas-reliefs. However, the overall reading that the relief (construction of the two-dimensional composition, which is already three-dimensional in itself, in an illusionary way) gives to the blind person allows him/her to grasp the related whole rather than the separation between parts and sections.

Every tactile reading is sectorial by definition: it proceeds through the induction of notions and then through intuitive deduction. The congenitally blind person, whose educated senses have produced a strengthening of cognitive intuition, proceeds by sectors and by the bridging of cognitive gaps, starting from the partial and at times fragmentary knowledge of representation. The mental construction of the arrangement of subjects, with their single expressivities and postures, requires the visually impaired person to conceptually assume specific points of view, as with the sighted observer towards the examined subject.
4.5 Clay modelling and plasticity of thought

In the modelling laboratories, an image is reproduced in clay after being experienced through touch by blind and visually impaired students of all ages (Figure 8.4).

Through knowledge of simple and complex shapes, regular and irregular geometries, it is the weight and consistency of materials, stasis and dynamism, senso-motorial perception and bi-manual skills that are encouraged, in order to strengthen those cognitive and imaginative faculties that are essential to access symbolic thought. The practice of modelling for manual and creative skills is achieved through creative play, while the specific learning of spatial concepts and body patterns involves comparison with models of reality, which are useful in stimulating a child’s recognition of familiar elements, the appropriation of the concept of graphico-plastic representation and the achieving of a concrete restitution of the image read by touch. During the free modelling of the clay, which is always supported and oriented by dialogue, the function of narration should not be underestimated. It in fact makes for the formative experience. In order to encourage the development and the strengthening of the cognitive and expressive skills of blind and visually impaired students in primary and secondary school, it is important to encourage experiential intentionality, which is facilitated by proprioceptive and kinesthetic actions aimed at strengthening the processes of visualisation, reification and restitution of mental images.

Besides these dedicated activities, the Museum encourages visits by school groups of sighted children who can explore the museum’s collection by touch and then become familiar with clay modelling, creating free subjects with their eyes closed. On these occasions the visit to the tactile museum takes on an integrative function if there is a visually impaired student in the class. But clay modelling is an added value especially for adolescents, young people and adults. The results of this activity are many, considering the importance of confronting

Figure 8.4 Clay reproduction of The great wave by blind student
the works of great masters by making them their own through study and imitation. Imitation has essential educational and cognitive functions in the experience of art and should be understood as the appropriation of a reference model to be internalised and recreated. This laboratory practice leads to socialisation and constructive confrontation through knowledge and the sharing of vision systems and it also teaches, introspectively, how to overcome any resistance to change. Through the pleasure of artistic creation, one discovers that living forms, amid constants and variables, live on in the plasticity of thought and the mobility of the body.

4.6 Accessibility of museum collections

For more than ten years, a particular pedagogy of the arts has been emerging and, thanks to its educational functions, it is increasingly being used in the educational and museological field. With regard to the need to make cultural heritage accessible, legislation must focus on the design and implementation of accessible paths that can facilitate the removal of sensory barriers. To this end, sensitivity towards the discipline is not enough, as a regulation of operational models is required, taking into account design and the operational directions that are essential for the permanent education of a visually impaired public, heterogeneous in terms of training and needs. The current plethora of more or less qualified initiatives in the field of accessibility requires careful and rigorous scrutiny, able to provide reliable opinions on the methods of communicating scientific culture and artistic heritage, in the presence of visual disabilities. The didactico-pedagogical method through which the Anteros Tactile Museum of Ancient and Modern Painting makes painting accessible to visually impaired people is the result of twenty years of applied research, with systematic documentation of the activities carried out. Probably because of this continuity and operational assiduity, the educational methods adopted have been accepted by prestigious museums which, as a result, have created similar educational services. These are dedicated to visually impaired people and inspired by a cognitive model in which the aesthetic emotion follows the cognitive experience, which is the result of an educational process. In Lombardy, Italy, there are at least three such institutions deserving of special attention for their prestige and effectiveness. The first is the exhibition of translations in bas-relief of Giulio Romanos’s famous frescoes, located in Palazzo Te. The second is the translation in bas-relief of the portrait of Duke Lionello d’Este, in the Accademia Carrera. The third is the three-dimensional translation of Leonardo da Vinci’s Last Supper, in the refectory of the Church of Santa Maria delle Grazie (Milan), visited by so many people from all over the world. It is important to remember that the presence of a good teaching instrument, even in a museum, cannot make up for a qualified reception service and a guide to the working of that instrument. Other accessible facilities are available in cultural capitals such as Rome and Florence: a few years ago, the Vatican Museums inaugurated a multi-sensory itinerary created within the Pinacoteca Vaticana, based on getting to know famous paintings, including the Angel playing the lute by Melozzo da Forli and The entombment of Christ by Caravaggio. For the initiative “Uffizi da toccare” (Uffizi by touch), the Uffizi Gallery has chosen to place the translation in bas-relief of The Spring by Sandro Botticelli just in front of the masterpiece of the Florentine Renaissance. The Instituto dei Ciechi Francesco Cavaza, therefore, through constant research activity conducted within the Anteros Museum and based on the design and production of three-dimensional translation paintings, has been collaborating for several years with important national and international institutions, in order to facilitate accessibility to artistic heritage and the training of personnel responsible for the admission and aesthetic education of visually impaired people. The institute has collaborated on the assessment of the requirements of tactile paintings with the Ministry of Cultural Heritage and Activities, dealing
with training, the identification of guidelines and the essential requirements to ensure the efficacy of museum educational services for visually impaired people. The training of professionals is indeed the first objective of an educational project wishing to associate educational aid with the efficacy of a pedagogical intervention appropriate to the person.

5. Concluding remarks

The discussion undertaken in this chapter has hinged on the power of words in their role as aesthetic equivalents of artistic images. After consideration of the philosophical, psychological and cognitive concepts underlying the whole question of “touch tours”, the discussion turned to the description of the formal, stylistic, iconographic and iconological aspects of how to create the ekphrasis captured in the words *Ut pictura poesis*. The work carried out at the Anteros Museum where paintings are “translated” into tri-dimensional models was presented in order to illustrate the practical results of the theoretical discussion. It has thus been shown that the translation of a painting requires an accurate and knowledgeable study of the perceptive behaviours of congenital, acquired and visually impaired people. Each translation must faithfully respect the form and composition of the original painting, maintaining spatial concepts and internal relations. The description of a work of art through an informative, exhaustive and evocative use of the word – understood as the aesthetic equivalent of the shape experienced by touch – strengthens the appreciation of the work explored haptically and links the quality of perception to the accurate cognition of the artistic image, thereby achieving a correct understanding of the artefact. The forms are re-drawn in tactile perception, leading to the achievement of mental vision. Thanks to the integrated use of the residual senses, particularly to the close relationship between touch and hearing, the masterpiece translated into bas-relief is always exhibited in museums together with an audio text, guiding the reader to the simultaneous understanding of form and content. This is how the mental channel favours the symbiosis between intellectual vision and sensitive perception. Imagination, especially in blind people, seen as an intimate instrument of knowledge, connects concrete and abstract thought through the production of symbolic thought and the reification of concepts. Symbols and metaphors attached to tactile images are the result of conscious elaboration, decomposition and re-composition of figures belonging to a world, sensitive to and evocative of another, partly intelligible, world.

Notes

1 The perception of air movement.
2 On the internet website of the Institute for the Blind Francesco Cavazza: www.cavazza.it, section *Anteros Museum*, you can find illustrative texts, scientific references and some historical-artistic boards models descriptive of the works on display, accompanied by images, for the use of the visually impaired; moreover, the press review is available, regarding the life and activity of the Museum and related scientific bibliography.
3 Arnheim’s discussion requires a careful consideration about the consciousness of seeing and the consciousness itself. Once we abandoned the idea that touch cannot give access to an overall view, we can nowadays say that each perception (tactile and optical) of “structured sets” needs to be based on an accurate examination of the processes through which we gain consciousness about our learning tools, which are linguistic, visual and verbal. All this, however, must be said with due caution (Secchi, 2004:34).
4 The sighted person can neatly perceive a subject that is in the background, while a blind person does not have this privilege. The non-sighted however, can acquire the context, even if it takes them a slightly longer time and so they can understand the same relationship between the subjects through
an appropriate structural reconstruction of the data that builds the relationship between subject and background and gradually come to the full vision. See Secchi, 2004: 35.

6. Further reading

7. References