

# Leonardo Da Vinci - Treatise on Painting

## PREFACE: KNOWLEDGE, LEARNING AND EXPERIENCE

### **Good men possess a natural desire to know\***

I know that many will say that this is a useless work, and these people will be those of whom Demetrius† said that he took no more account of the wind from their mouths, which caused their words, than of the wind which issued from their lower regions. These men possess a desire only for material wealth and are entirely devoid of the desire for wisdom, which is the sustenance and truly dependable wealth of the mind.

I know well that, not being a man of letters, it will appear to some presumptuous people that they can reasonably belabour me with the allegation that I am a man without learning. Foolish people! Do they not know that I might reply as Marius‡ did to the Roman patricians by saying that they who adorn themselves with the labours of others do not wish to concede to me my own; they will say that since I do not have literary learning I cannot possibly express the things I wish to treat, but they do not grasp that my concerns are better handled through experience rather than bookishness.<sup>1</sup> Though I may not know, like them, how to cite from the authors, I will cite something far more worthy, quoting experience, mistress of their masters. These very people go about inflated and pompous, clothed and adorned not with their own labours but with those of others. If they disparage me as an inventor, how much more they, who never invented anything but are trumpeters and reciters of the works of others, are open to criticism. Moreover those men who are inventors are interpreters of nature, and when those men are compared to the reciters and trumpeters of the works of others, they should be judged and appraised in relation to each other in no other way than the object in front of a mirror may be judged to surpass its reflection, for the former is actually something and the other nothing. People who are little reliant upon nature are dressed in borrowed clothes, without which I would rank them with the herds of beasts.<sup>2</sup>

Anyone who argues on the basis of authority does not exploit his insight but his memory. Good writing is born of a good natural understanding, and since the cause is to be praised rather than the effect, you should praise natural understanding without bookish learning rather than bookish learning without understanding.<sup>3</sup>

Many will believe that they can reasonably reproach me, alleging that my proofs go against the authority of those men held in greatest reverence by those of inexpert judgement, not considering that my works are born of simple and pure experience, which is the true mistress. This gives the rules by which you are able to distinguish the true from the false, and enable men to strive towards what is possible with more discrimination, and not to wrap themselves up in ignorance. If the rules are not put into effect, you will in despair give yourself up to melancholy.<sup>4</sup>

These rules will enable you to possess a free and good judgement, since good judgement is born of good understanding, and good understanding derives from reason expounded through good rules, and good rules are the daughters of good experience – the common mother of all the sciences and arts.<sup>5</sup> Experience does not err, but rather your judgements err when they hope to exact effects that are not within her power. Men wrongly complain of experience, which with great abuse they accuse of falsity, but let experience be, and turn such complaints against your own ignorance which causes you to be carried away by vain and foolish desires.<sup>6</sup> They say that knowledge born of experience is mechanical but that knowledge born and ending in the mind is scientific, and that knowledge born in science and ending in manual operations is semi-mechanical, but to me it appears that those sciences are vain and full of error that have not been born of experience, mother of every certainty and which do not likewise end in experience; that is to say, those that have neither at their beginning, middle or end passed through any of the five senses.<sup>7</sup>

True sciences are those which have penetrated through the senses as a result of experience and thus silencing the tongues of disputants, not feeding investigators on dreams but always proceeding successively from primary truths and established principles, in a proper order towards the conclusion. This may be witnessed in the principles of mathematics, that is to say, number and measure – termed arithmetic and geometry – which deal with discontinuous and continuous quantities with the utmost truth. Here no one hazards guesses as to whether two threes make more or less than six, or whether the angles of a triangle are less than two right angles. Here all guesswork remains destroyed in eternal silence, and these sciences are enjoyed by their devotees in peace, which is not possible with the delusory sciences of a wholly cerebral kind.<sup>8</sup>

## Part I:

# GENERAL PRINCIPLES

## THE SCIENCE OF ART

### He who despises painting loves neither philosophy nor nature

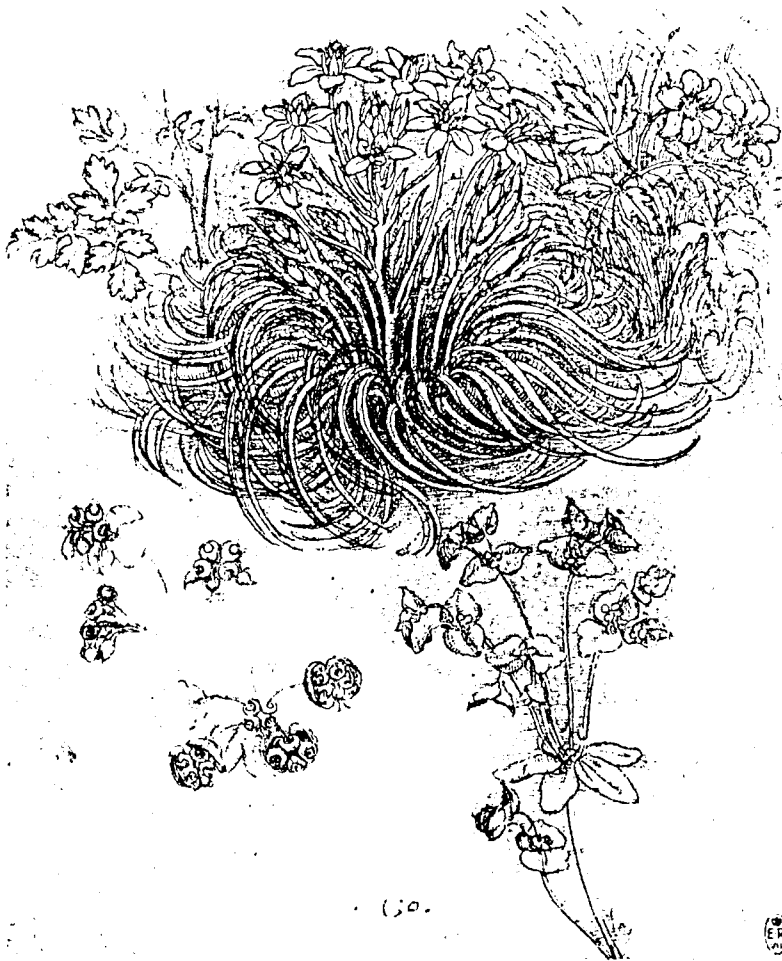
If you scorn painting, which is the sole imitator of all the manifest works of nature, you will certainly be scorning a subtle invention, which with philosophical and subtle speculation considers all manner of forms: sea, land, trees, animals, grasses, flowers, all of which are enveloped in light and shade. Truly this is science, the legitimate daughter of nature, because painting is born of that nature; but to be more correct, we should say the granddaughter of nature, because all visible things have been brought forth by nature and it is among these that painting is born. Therefore we may justly speak of it as the granddaughter of nature and as the kin of god.<sup>9</sup>

### Why painting is not numbered amongst the sciences

Because writers had no access to definitions of the science of painting, they were not able to describe its rank and constituent elements. Since painting does not achieve its ends through words, it is placed below the . . . sciences through ignorance, but it does not on this account lose its divinity. And in truth it is not difficult to understand why it has not been accorded nobility, because it possesses nobility in itself without the help of the tongues of others – no less than do the excellent works of nature. If the painters have not described and codified their art as science, it is not the fault of painting, and it is none the less noble for that. Few painters make a profession of writing since their life is too short for its cultivation. Would we similarly deny the existence of the particular qualities of herbs, stones or plants because men were not acquainted with them? Certainly not. We should say that these herbs retained their intrinsic nobility, without the help of human language or writings.<sup>10</sup>

### Whether painting is a science or not

That mental discourse that originates in first principles is termed science. Nothing can be found in nature that is not part of science, like



2. Star of Bethlehem, Windsor, RL 12424.  
'Painting . . . with philosophical and subtle speculation considers all manners of forms: sea, land, trees, animals, grasses, flowers . . .'

continuous quantity, that is to say, geometry, which, commencing with the surfaces of bodies, is found to have its origins in lines, the boundary of these surfaces. Yet we do not remain satisfied with this, in that we know that line has its conclusion in a point, and nothing can be smaller than that which is a point. Therefore the point is the first principle of geometry, and no other thing can be found either in nature or in the human mind that can give rise to the point.\*

If you were to say that the contact made on a surface by the very tip of the point of a pen would create a point, this is not true. Rather, we would say that such contact as this would actually be a surface around a centre and that centre is the location of the point. And such a point is not of the material of the surface. If all the points that are potentially in the universe were to be united – should such a union be possible – neither they nor a single point would compose any part of a surface. And given, if you were to so imagine it, a whole composed of a thousand points, and dividing some part of this quantity by one thousand, it may fairly be said that this part will be equal to the whole. This may be demonstrated by zero or nothing, that is to say, the tenth figure in arithmetic, which is represented by an '0', which is in itself nothing, but if it is placed after the unit it will make ten, and if you should put two after the unit it will make one hundred, and so on infinitely – the number to which it is joined always growing by ten times. But in themselves the noughts do not have any value other than nought, and all the noughts in the universe are equal to a single nought with respect to substance and value.

No human investigation may claim to be a true science if it has not passed through mathematical demonstrations, and if you say that the sciences that begin and end in the mind exhibit truth, this cannot be allowed, but must be denied for many reasons, above all because such mental discourses do not involve experience, without which nothing can be achieved with certainty.<sup>11</sup>

Those sciences are termed mathematical which, passing through the senses, are certain to the highest degree, and these are only two in number. The first is arithmetic and the second geometry, one dealing with discontinuous quantity and the other with continuous quantity. From these is born perspective, devoted to all the functions of the eye and to its delight with various speculations. From these three, arithmetic, geometry and perspective – and if one of them is missing nothing can be accomplished – astronomy arises by means of the visual rays. With number and measure it calculates the distances and dimensions of the heavenly bodies, as well as the terrestrial ones. Next comes music, which is born of continuous and discrete quantities and which is dedicated to the ear, a sense less noble than the eye. Through the ear, music sends the various harmonies of diverse instruments to the *sensus communis*\* Next follows smell, which satisfies the *sensus*

*communis* with various odours, but although these odours give rise to fragrance, a harmony similar to music, none the less it is not in man's power to make a science out of it. The same applies to taste and touch.<sup>12</sup>

### [Principle of the science of painting]

The principle of the science of painting is the point; second is the line; third is the surface; fourth is the body which is enclosed by these surfaces. And this is just what it is to be represented, that is to say, the body which is represented, since in truth the scope of painting does not extend beyond the representation of the solid body or the shape of all the things that are visible.<sup>13</sup>

Point is said to be that which cannot be divided into any part. Line is said to be made by moving the point along. Therefore line will be divisible in its length, but its breadth will be completely indivisible. Surface is said to be like extending the line into breadth, so that it will be possible to divide it in length and breadth. But it has no depth. But body I affirm as arising when length and breadth acquire depth and are divisible. Body I call that which is covered by surfaces, the appearance of which becomes visible with light. Surface I call the outer skin of a body, which defines the forms of a body and its boundary.\* Boundary I call the surrounding edge of each seen surface, the termination of which marks the division [between one body and another].<sup>14</sup>

### The second principle of the science of painting

The second principle of the science of painting is the shadow of bodies, by which they can be represented. We shall give the principles of shadow, with which we must proceed if we wish to model in three dimensions on the aforesaid surface.<sup>15</sup>

### What is the first intentional aim of the painter?

The first intention of the painter is to make a flat surface display a body as if modelled and separated from this plane, and he who most surpasses others in this skill deserves most praise. This accomplishment, with which the science of painting is crowned, arises from light and shade, or we may say *chiaroscuro*.\* Therefore, whoever fights shy of shadow fights shy of the glory of art as recognised by noble intellects, but acquires glory according to the ignorant masses, who require

nothing of painting other than beauty of colour, totally forgetting the beauty and wonder of a flat surface displaying relief.<sup>16</sup>

There are two principal parts into which painting is divided: firstly the outlines which surround the shapes of solid bodies – and these outlines require draughtsmanship; and secondly what is called shading. But draughtsmanship is of such excellence that it not only investigates the works of nature but also infinitely more than those made by nature... On this account we should conclude that it is not only a science but a goddess which should be duly accorded that title. This deity repeats all the visible works of almighty God.<sup>17</sup>

### Of the ten functions of the eye, all appertaining to painting

Painting embraces all the ten functions of the eye; that is to say, darkness, light, body and colour, shape and location, distance and closeness, motion and rest.\* My little work will comprise an interweaving of these functions, reminding the painter of the rules and methods by which he may imitate with his art all these things – the works by which nature adorns the world.<sup>18</sup>

### How painting includes all the surfaces of bodies...<sup>19</sup>

The science of painting includes all the colours of surfaces and the shapes of the enclosed bodies, and their closeness and distance, with their due degree of diminution according to their degrees of remoteness. And this science is the mother of perspective, that is to say, visual rays. Perspective is divided into three parts, of which the first is concerned solely with the outlines of the bodies; the second in the diminution of colours at varying distances; the third in the loss of definition of bodies at various distances. Now, the first, which only embraces the outlines and contours of bodies, is called drawing, that is to say, the figuration of any solid body. From this arises another science, which embraces light and shade, or we may wish to say *chiaroscuro*, a science of complex exposition. From the visual rays, the science of astronomy has arisen, which is merely perspective, since it consists of visual lines and intersected pyramids.<sup>20</sup>

There is no part of astronomy which is not a function of visual rays and perspective – the daughter of painting – because it is the painter through the requirements of his art who has given birth to perspective, in that he cannot manage without the outlines that enclose the varied



3. *Virgin of the Rocks*, detail of head of Angel, London, National Gallery.  
 'The first intention of the painter is to make a flat surface display a body as if modelled and separated from this plane. ... This accomplishment ... arises from light and shade'

shapes of the bodies generated by nature – without which the art of the geometer is blind. The geometer analyses every surface circumscribed by lines using the figure of a square and every solid using the figure of a cube, and the arithmetician does similarly with his cubic and square roots. But their two sciences do not extend beyond the consideration of continuous and discontinuous quantities. The quality they cannot express is the beauty of the works of nature and the adornments of the world.<sup>21</sup>

Painting only extends to the surfaces of bodies, and its perspective extends to the increase and decrease in size of the bodies and of their colours, because anything as it is removed from the eye loses degrees of size and colour according to the extent of its remoteness. Therefore painting is philosophy, because philosophy deals with augmented and diminished motion... Or inversely we may say that the object seen by the eye gains such size and clarity and colour as the space interposed between it and the eye diminishes... Painting can be shown to be philosophy because it deals with the motions of bodies in the briskness of their actions, and philosophy too extends to motion.<sup>22</sup> Philosophy penetrates within these bodies, considering what comprises their distinctive essences, but it does not remain satisfied with its truth as does the painter with his, which comprises the primary truth of the bodies, because the eye deludes itself less.<sup>23</sup>

### How the eye is less easily deluded in its workings than any other sense

The eye deludes itself less than any of the other senses, because it sees by none other than the straight lines which compose a pyramid, the base of which is the object, and the lines conduct the object to the eye, as I intend to show. But the ear is strongly subject to delusions about the location and distance of its objects because the images [of sound] do not reach it in straight lines, like those of the eye, but by tortuous and reflexive lines. Many times things that are remote sound closer than those nearby, on account of the way the images are transmitted; although the sound of the echo is referred to the ear only by means of straight lines. The sense of smell is even less able to locate the source of an odour. Taste and touch, which come into contact with their objects, can only gain knowledge from this direct contact.<sup>24</sup>

### Which science is most useful, and in what does its utility consist?

That science is most useful whose fruits are most communicable, and thus conversely that which is less communicable is less useful. The end results of painting are communicable to all the generations in the universe, because its results are a matter for the visual faculty. And they are not transmitted by the ear to the *sensus communis* in the same manner as things are transmitted by the eye. Therefore the eye has no need for translators from various languages, as have words, and it gives immediate satisfaction to human beings in no other way than the things produced by nature herself – and not only to human beings but also to other animals, as is shown in a picture representing the father of a family, which little children tried to caress even in their swaddling clothes, and similarly the dog and cat in the same household. It was an amazing display to behold.

Painting represents the works of nature to its sense with greater truth and certitude than do words and letters, but letters represent words to its sense with greater truth than does painting. But we declare the science representing the works of nature to be more marvellous than that science which represents the works of the worker, that is to say, the products of man, which words are, as in poetry and other similar things which are expressed through human language.

### Of the imitable sciences

Those sciences that are imitable are of such a kind that through them the disciple can equal the master and produce comparable results. These sciences are useful for the imitator, but they are not of such excellence as those that cannot be passed down in this way as if they are heritable goods. Amongst these, painting has first place. It cannot be taught to someone not endowed with it by nature, as can be done with mathematics in which the pupil takes in as much as the master gives out. It cannot be copied as can writing, in which the copy has as much worth as the original. It cannot be reproduced as can sculpture, in which the cast shares with the original the essential merits of the piece. It cannot produce infinite offspring, like printed books. Painting alone retains its nobility, bringing honours singularly to its author and remaining precious and unique. It never gives rise to offspring equal to itself, and such singularity gives it greater excellence than those things that are spread abroad. Do we not even now see the greatest kings of the Orient going out veiled and concealed, believing their fame to be diminished by showing themselves publicly and divulging their

presence? Do we not see pictures representing the divine beings constantly kept under coverlets of the greatest price? And whenever they are unveiled there is first great ecclesiastical solemnity with much hymn singing, and then at the moment of unveiling the great multitude of people who have gathered there immediately throw themselves to the ground, worshipping and praying to the deity, who is represented in the picture, for the repairing of their lost health and for their eternal salvation, exactly as if this goddess were there as a living presence. This does not happen with any other science or other works of man, and if you claim that this is not due to the power of the painter but to the inherent power of the thing represented, it may be replied that in this case the minds of the men would be satisfied were they to remain in their beds rather than going to wearisome and dangerous places on pilgrimages, as may be continually witnessed. But since such pilgrimages continue to take place, what causes their inessential travels? Certainly you will concede that it is the visual image. All the writings could not do this, by representing so potently the form and spirit of this deity. Accordingly it would seem that the deity loves this painting and loves those who love and revere it, and takes delight in being adored in this way rather than in any other form of imitation, and thus bestows grace and gifts of salvation in accordance with the faith of those who gather in that location.<sup>25</sup>

## THE WORKS OF THE EYE AND EAR COMPARED

### How painting surpasses all the works of man on account of the subtle speculations with which it is concerned

The eye, which is said to be the window of the soul, is the primary means by which the *sensus communis*\* of the brain may most fully and magnificently contemplate the infinite works of nature, and the ear is the second, acquiring nobility through the recounting of things which the eye has seen. If you, historians or poets or mathematicians, had not seen things through your eyes, you would only be able to report them feebly in your writings. And you, poet, should you wish to depict a story as if painting with your pen, the painter with his brush will more likely succeed and will be understood less laboriously. If you assert that painting is dumb poetry, † then the painter may call poetry blind painting.<sup>26</sup> It may be said, therefore, that poetry is the science that serves as the pre-eminent medium for the blind, and painting does the same for the deaf. But painting remains the worthier in as much as it serves the nobler sense<sup>27</sup> and remakes the forms and figures of nature

with greater truth than the poet. And the works of nature are far more worthy than words, which are the products of man, because there is the same relationship between the works of man and those of nature as between man and god. Therefore, it is nobler to imitate things in nature, which are in fact the real images, than to imitate, in words, the words and deeds of man.<sup>28</sup>

Now, do you not see that the eye embraces the beauty of all the world? The eye is the commander of astronomy; it makes cosmography; it guides and rectifies all the human arts; it conducts man to the various regions of this world; it is the prince of mathematics; its sciences are most certain; it has measured the height and size of the stars; it has disclosed the elements and their distributions; it has made predictions of future events by means of the course of the stars; it has generated architecture, perspective and divine painting. Oh excellent above all other things created by God! What manner of praises could match your nobility? What races, what languages would they be that could describe in full your functions . . . ? Using the eye, human industry has discovered fire, by which means it is able to regain what darkness had previously taken away. It has graced nature with agriculture and delectable gardens.

But what need is there for me to expand into an elevated and lengthy discourse? What is there that cannot be accomplished by the eye? It allows men to move from east to west. It has discovered navigation. And it triumphs over nature, in that the constituent parts of nature are finite, but the works which the eye commands of the hands are infinite, as is demonstrated by the painter in his rendering of numberless forms of animals, grasses, trees and places.<sup>29</sup>

### Which is the greater deprivation for man: to lose sight or hearing?<sup>30</sup>

The eye, in which the beauty of the world is mirrored for spectators, is of such excellence that whoever consents to its loss deprives himself of access to all the works of nature. The soul is reconciled to stay in its human prison on account of its vision of these works through the eyes – by means of which all the varieties of objects in nature are presented to the soul. But he who loses his eyes leaves his soul in a dark prison in which every hope is lost of seeing again the sun, the light of the world. And how many are those for whom the shades of night are hardly bearable, though they be but short-lived. What would they do if such shades were to be their companions for life?

Certainly, there is no one who would not choose to lose hearing and smell rather than sight. By consenting to the loss of hearing, a man surrenders all those sciences which achieve their ends by words and

he would only do this in order not to lose the beauty of the world which consists of the surfaces of bodies, with their visual effects and actual forms as reflected in the human eye.<sup>31</sup> A deaf man only foregoes the sound made by the movement of the percussed air, which is the least matter in the world.<sup>32</sup> He who loses sight loses the spectacle and beauty of the universe, and comes to resemble someone who has been buried alive in a tomb in which he can move and survive.<sup>33</sup>

Animals receive worse injury by the loss of vision rather than hearing, for many reasons: firstly, by means of sight, they find food with which to nourish themselves, as is necessary for all animals; secondly, through sight, they can appreciate the beauty of all created things, most especially those that arouse love. One born blind is never able to make good this deficiency through hearing, because he would never be able to judge whatever might be beautiful. For him there remains only hearing, through which he is only able to hear voices and human speech, contained in which are the names of all things to which names are assigned. Without the knowledge of these names it is possible to live contentedly, as is seen in those born deaf, namely the mutes, most of whom are able to find pleasure in the practice of drawing.

If you say that sight provides an impediment to sharp and subtle mental reasoning, through which insight is achieved into divine sciences, and that this kind of impediment led a philosopher to deprive himself of sight,\* the answer to this is that the eye, lord of the senses, does its duty by obstructing all the confusions and lies which arise not in sciences but in those discourses undertaken with great commotion and gesticulation. Hearing, which remains most offended by them, should do the same, since it seeks an accord in which all the senses tally. If this philosopher plucked out his eyes to remove the impediment to his discourse, you may well consider that such an act fittingly accompanied his mind and reasoning, since they were equally insane. Could he not have closed his eyes when he entered such a frenzied state and kept them thus closed until his fury had abated? But the man was mad, and his ideas were mad, and none more so than the plucking out of his eyes.<sup>34</sup>

### The difference between painting and poetry<sup>35</sup>

The imagination cannot see with such excellence as the eye, because the eye receives and gives the images or rather the semblances of the objects to the *impressiva*,\* and from this *impressiva* to the *sensus communis*, where it is interpreted, but the imagination is unable to exist outside the *sensus communis*, unless it passes to the memory where it terminates and dies if the thing imagined is not of great excellence. Poetry arises in the mind and imagination of the poet, who desires to

depict the same things as the painter. He wishes to parallel the painter, but in truth he is far removed . . . Therefore, with respect to representation, we may justly claim that the difference between the science of painting and poetry is equivalent to that between a body and its cast shadow. And yet the difference is even greater than this, because the shadow of the body at least enters the *sensus communis* through the eye, while the imagined form of the body does not enter through this sense, but is born in the darkness of the inner eye. Oh! what a difference there is between the imaginary quality of such light in the dark inner eye and actually seeing it outside this darkness!<sup>36</sup>

Painting immediately presents to you the demonstrations which its maker has intended and gives as much pleasure to the greatest of senses as anything created by nature. And in this case, the poet who sends the same thing to the *sensus communis* via hearing, a lesser sense, cannot give any greater pleasure to the eye than if you were listening to something spoken. Now, see what difference there is between hearing an extended account of something that pleases the eye and seeing it instantaneously, just as natural things are seen. Yet the works of the poets must be read over a long span of time. Often there are occasions when they are not understood and it is necessary to compose various commentaries, and very rarely do the commentators understand what was intended by the mind the poet. And many times authors do not read out any more than a small part of their work through lack of time. But the work of the painter is instantaneously accessible to his spectators.<sup>37</sup>

Painting presents its essence to you in one moment through the faculty of vision by the same means as the *impressiva* receives the objects in nature, and thus it simultaneously conveys the proportional harmony of which the parts of the whole are composed, and delights the senses. Poetry presents the same thing but by a less noble means than by the eye, conveying it more confusedly to the *impressiva* and describing the configurations of the particular objects more slowly than is accomplished by the eye. The eye is the true intermediary between the objects and the *impressiva*, which immediately transmits with the highest fidelity the true surfaces and shapes of whatever is in front of it. And from these is born the proportionality called harmony, which delights the sense with sweet concord, no differently from the proportionality made by different musical notes to the sense of hearing. And yet hearing is less noble than sight, in that as it is born so it dies, and it is as fleeting in its death as it is in its birth. This cannot apply to the sense of sight, because if you represent to the eye a human beauty composed of proportionately beautiful parts, this beauty will not be so impermanent or rapidly destroyed as that made by music. On the contrary, it has great permanence and allows you to see and contemplate it, and does not need to be reborn in numerous

performances like music, nor will it induce boredom in you. Rather, human beauty will stimulate love in you, and will make all your senses envious, as if they wished to emulate the eye – as if the mouth would wish to suck it into the body, as if the ear would seek its pleasure from being able to hear visual beauty, as if the sense of touch would wish it to be infused through the pores, and as if the nose would wish to inhale it with the air that it continually exhales.<sup>38</sup>

If you were to say that poetry is more enduring, I would reply that the works of a coppersmith are even more enduring, because time conserves them better than the works of both of us. Nevertheless, the coppersmith requires little imagination. And by painting with enamels on copper, pictures can be made more durable.<sup>39</sup> Time will destroy the harmony of human beauty in a few years, but this does not occur with such beauty imitated by the painter, because time will long preserve it. And the eye, in keeping with its function, will derive as much true pleasure from depicted beauty as from the living beauty denied to it. . . . In this case, the painted imitation can provide a surrogate in large measure – a form of substitution that the poet cannot effect. In such matters the poet may wish to rival the painter, but he does not allow for the fact that the words with which he delineates the elements of beauty are separated from one another by time, which leaves voids between them and dismembers the proportions. He cannot delineate them without excessive wordiness, and not being able to depict them, he cannot compose the proportional harmonies that are produced by divine proportions. During the very time that it takes to embrace the contemplation of painted beauty it is not possible to accomplish a beautiful description, and it is a sin against nature to send via the ear those things that should be sent via the eye. Let the effects of music enter through the ear, but do not send the science of painting that way, since it is the true imitator of the natural shapes of all things.<sup>40</sup>

A poem, which has to accomplish the representation of a given beauty by means of the representation of each of those parts which would comprise the same harmony in a painting, does not achieve any more grace than music would produce if each note were to be heard on its own at various intervals, failing to produce any harmony – just as if you wished to show a face part by part, always covering the section previously shown. In such a demonstration, the concealment does not allow the composition of any proportional harmony because the eye cannot embrace all of it within its faculty of vision simultaneously.<sup>41</sup>

#### [Reply of King Mathias to a poet who vied with a painter]

On King Mathias's\* birthday, a poet had brought him a work made to commemorate the day on which the King was gifted to the world, when

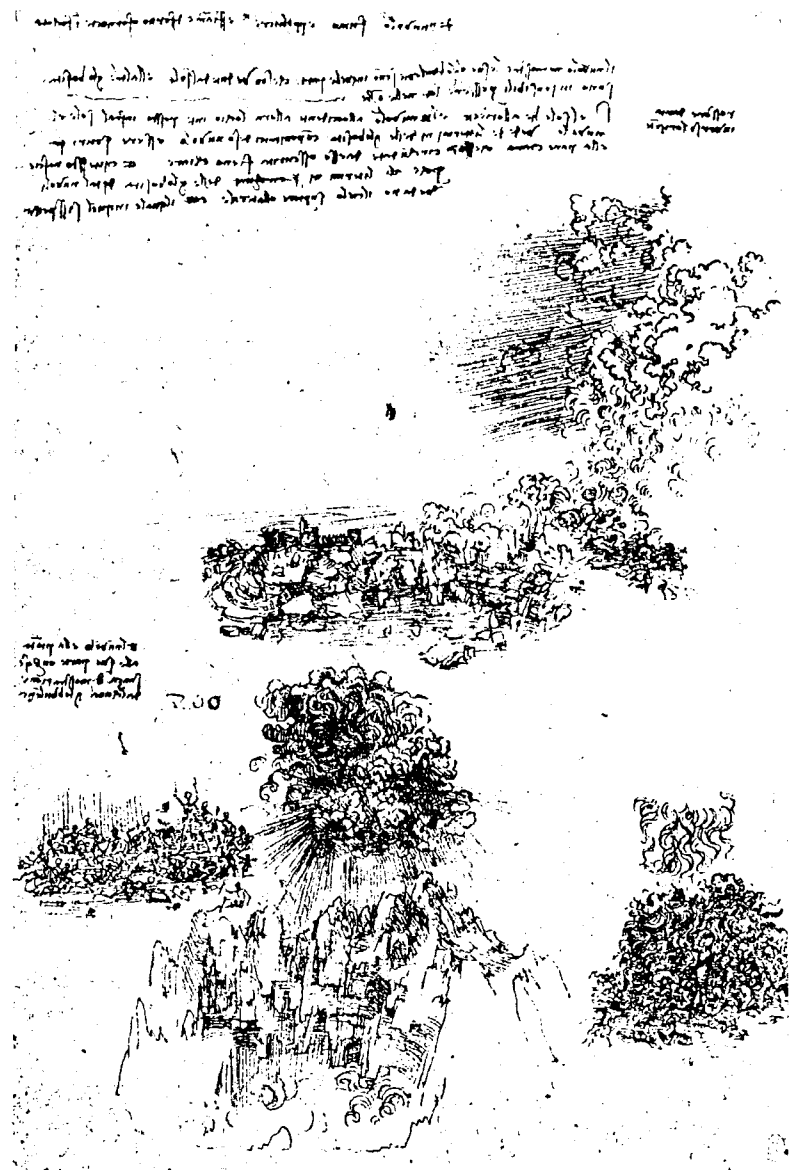


4. Cecilia Gallerani, Cracow, Czartoryski Museum.  
'a painter presented [the King] with a portrait of his beloved lady. Immediately the King closed the book of the poet and turned to the picture, fixing his gaze upon it with great admiration'

a painter presented him with a portrait of his beloved lady. Immediately the King closed the book of the poet and turned to the picture, fixing his gaze upon it with great admiration. Whereupon the poet very indignantly said, 'Read, O King! Read and you will discover something of greater consequence than a dumb painting'. The King, on hearing the accusation that he was giving credence to dumb objects said, 'Be silent, O poet. You do not know what you are saying. This picture serves a greater sense than yours, which is for the blind. Give me something I can see and touch, and not only hear, and do not criticise my decision to tuck your work under my arm, while I take up that of the painter in both hands to place it before my eyes, because my hands acted spontaneously in serving the nobler sense – and this is not hearing. For my part I judge that there is an equivalent relationship between the science of the painter and that of the poet as there is between the senses to which they are subject. Do you not know that our soul is composed of harmony, and that harmony cannot be generated other than when the proportions of the form are seen and heard instantaneously? Can you not see that in your science, proportionality is not created in an instant, but each part is born successively after the other, and the succeeding one is not born if the previous one has not died? From this I judge that your invention is markedly inferior to that of the painter, solely because it cannot compose a proportional harmony. It does not satisfy the mind of the listener or viewer in the same way as the proportionality of the very beautiful parts composing the divine beauty of this face before me, and which by contrast are conjoined instantaneously, giving me such delight with their divine proportions. I judge that there is nothing on earth made by man which can rank higher.'<sup>42</sup>

### The arguments of the poet and the painter, and what difference there is between poetry and painting<sup>43</sup>

If the poet says that he can inflame men with love, which is the central aim in all animal species, the painter has the power to do the same, and to an even greater degree, in that he can place in front of the lover the true likeness of that which is beloved, often making him kiss and speak to it. This would never happen with the same beauties set before him by the writer. So much greater is the power of a painting over a man's mind that he may be enchanted and enraptured by a painting that does not represent any living woman. It previously happened to me that I made a picture representing a holy subject, which was bought by someone who loved it and who wished to remove the attributes of its divinity in order that he might kiss it without guilt. But finally his conscience overcame his sighs and lust, and he was forced to banish



5. Infernal destruction, Windsor, RL 12388  
'I will describe hell or paradise, or other delights and terrors'

it from his house. Now, poet, attempt to describe a beauty, without basing your depiction on an actual person, and arouse men to such desires with it.

If you say, 'I will describe hell or paradise, or other delights and terrors', the painter will surpass you because he will place things before you which will silently tell of such delights or terrify you or turn your mind to flight.<sup>44</sup>

If you, poet, were to portray a bloody battle you would write about the dark and murky air amid the smoke of fearful and deadly engines of war, mixed with all the filthy dust that fouls the air, and about the fearful flight of wretches terrified by awful death. In this case, the painter will surpass you, because your pen will be worn out before you have fully described something that the painter may present to you instantaneously using his science. And your tongue will be impeded by thirst and your body by sleep and hunger, before you could show in words what the painter may display in an instant. In such a picture nothing is lacking except the souls of depicted beings. And in each body the integration of its parts is demonstrated from a single viewpoint. It would be a long and tedious thing in poetry to portray all the movements of the participants in such a war, with all the components and members of their bodies and their accoutrements. The painter can accomplish this and place it before you with great immediacy and truth, and such a display lacks only the noise of the weapons, the shouts of the terrifying victors and the screams and cries of those terrified. And the poet, too, is unable to represent these things to the sense of hearing.<sup>45</sup>

### The painter disputes with the poet<sup>46</sup>

Painting moves the senses more rapidly than poetry . . . A painter made a figure so that anyone who saw it immediately yawned and continued to repeat this behaviour for as long as his eyes remained on the picture in which the yawning was actually portrayed. Others have painted such libidinous and wanton acts that they incited spectators to indulge in these same activities, which poetry cannot accomplish. And if you were to describe the image of some deities, such writing would never be venerated in the same way as a painted goddess, since votive offerings and various prayers will continually be made to such a picture. Many generations from diverse regions and across the eastern seas will flock to it, and they will beg succour from such a painting but not from writing.<sup>47</sup>

What moves you, O man, to abandon your own houses in the cities and to leave relatives and friends and to go into the countryside through mountains and valleys, if not the natural beauty of the world,



6. Warriors's head for the *Battle of Anghiari*, Budapest, Museum of Fine Arts. 'the shouts of the terrifying victors'

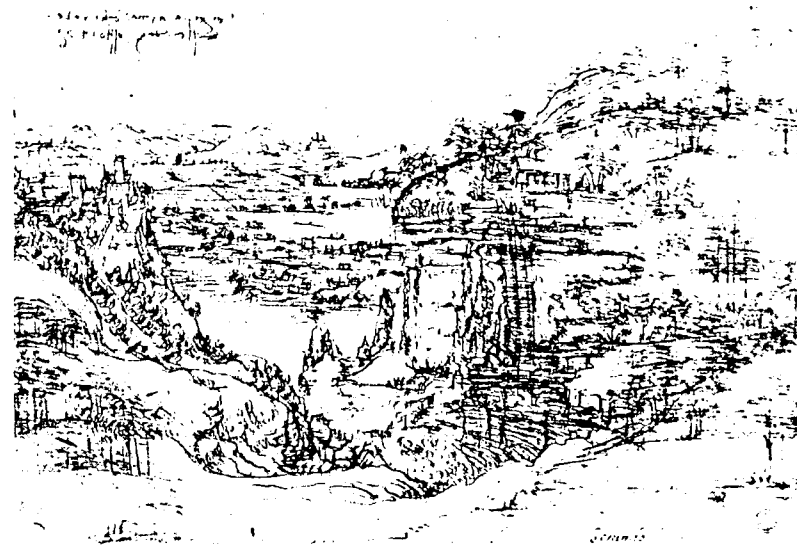
which, if you think carefully about it, can only be appreciated by the sense of sight? And if in this respect the poet also wishes to call himself a painter, why do you not take up the descriptions of such places by the poet, and stay at home without subjecting yourself to the excessive heat of the sun? Would that not be more convenient and less arduous for you, because it could be accomplished in the cool and without travel or danger of sickness? But your soul would not enjoy the benefits provided by the eyes, windows of its dwelling, and it would not receive the images of pleasant locations; it would not see the shady valleys irrigated by the play of winding rivers; it would not see the various flowers, which with their colours make a harmony for the eye, and likewise all the other things that may be presented to the eye. But, if a painter in the cold and harsh wintertime set before you the same or similar landscapes as those in which you once took your pleasures beside a spring, you will be able to picture yourself again as a lover with your beloved in flowery meadows, beneath the sweet shade of verdant trees. Will you not obtain a different pleasure than from hearing the poet's description of such effects?<sup>48</sup>

### How the painter is lord of every kind of person and of all things

If the painter wishes to see beauties that would enrapture him, he is master of their production, and if he wishes to see monstrous things which might terrify or which would be buffoonish and laughable or truly pitiable, he is their lord and god. And if he wishes to produce places or deserts, or shady and cool spots in hot weather, he can depict them, and similarly warm places in cold weather. If he seeks valleys, if he wants to disclose great expanses of countryside from the summits of high mountains, and if he subsequently wishes to see the horizon of the sea, he is lord of them, or if from low valleys he wishes to see high mountains, or from high mountains see low valleys and beaches. In fact, therefore, whatever there is in the universe through essence, presence or imagination, he has it first in his mind and then in his hands, and these are of such excellence that they can generate a proportional harmony in the time equivalent to a single glance, just as real things do.<sup>49</sup>

### An argument of the poet against the painter<sup>50</sup>

You say that a science is correspondingly more noble to the extent that it embraces a more worthy subject, and accordingly, that a spurious speculation about the nature of god is more valuable than one



9. Landscape, the 'Val d'Arno', Florence, Uffizi.  
'if he wants to disclose great expanses of countryside from the summits of high mountains'

concerned with something less elevated. In reply we will state that painting, which embraces only the works of God, is more worthy than poetry, which only embraces the lying fictions of the works of man.<sup>51</sup>

The poet may say, 'I will make a story which signifies great things'. The painter can do the same, as when Apelles painted the *Calumny*.<sup>52</sup> The poet says that his science consists of invention and measure, and this is the main substance of poetry – invention of the subject-matter and measurement in metre – which is subsequently dressed up in all the other sciences. The painter responds that he has the same obligations in the science of painting, that is, invention and measure – invention of the subject that he must depict and measurement of the things painted, so that they should not be ill-proportioned.<sup>53</sup>

Painting does not dress itself up in the three other sciences. On the contrary, these others dress themselves up largely by means of painting, as does astronomy,\* which can achieve nothing without perspective, the principal element of painting – I mean mathematical astronomy, not that false prophecy which is (if you will forgive me for saying so) the means by which fools live.<sup>54</sup>

If poetry embraces moral philosophy, painting is natural philosophy. If poetry describes the operation of the mind, painting considers the action of the mind in bodily motions. If poetry terrifies people with fictional hells, painting can do likewise by presenting in reality the same thing. Supposing that the poet, like the painter, depicts beauty, fierceness, an evil or ugly thing, or something monstrous, by transforming objects in whatever manner he wishes, then the painter will give greater satisfaction. Have we not seen painting which had such a conformity with the imitated object that they have deceived both men and animals?<sup>55</sup>

I once saw a painting which deceived a dog by means of the likeness of the painting to its master. The dog made a great fuss of it. And in a similar way I have seen dogs barking and trying to bite painted dogs, and a monkey did an infinite number of stupid things in front of a painted monkey.\* I have seen swallows fly and perch on iron bars which have been painted as if they are projecting in front of the windows of buildings.<sup>56</sup>

Here the poet answers, and concedes the above arguments, but adds that he is superior to the painter because he can make men talk and argue about diverse fictions in which he depicts things that do not exist; because he can induce men to take up arms; because he will describe the heavens, the stars, nature and the arts and everything. To this one replies that none of these things of which he speaks belongs within his real profession. But if he wishes to make speeches and orations, he must be persuaded that he will be conquered by the orator, and that if he wishes to speak of astronomy, he has stolen it from the astronomer, and philosophy from the philosopher.<sup>57</sup> The only true office of the poet is to invent words for people who talk to each other. Only these words can he represent naturally to the sense of hearing, because they are in themselves the natural things that are created by the human voice. But in all other respects he is bettered by the painter.<sup>58</sup>

### How music may be called the younger sister of painting

Music is not to be regarded as other than the sister of painting, in as much as she is dependent on hearing, second sense behind that of sight. She composes harmony from the conjunction of her proportional parts, which make their effect instantaneously, being constrained to arise and die in one or more harmonic intervals. These intervals may be said to circumscribe the proportionality of the component parts of which such harmony is composed – no differently from the linear contours of the limbs from which human beauty is generated.<sup>59</sup>

Although the objects in front of the eye touch each other as if hand

in hand, I shall none the less found my rule on a scale of 20 for 20 *braccia*, just as the musician has done with notes.\* Although the notes are united and attached to each other, he has none the less recognised small intervals between note and note, designating them as first, second, third, fourth and fifth, and in this manner from interval to interval has given names to the varieties of raised and lowered notes.<sup>60</sup>

But painting excels and is superior in rank to music, because it does not perish immediately after its creation, as happens with unfortunate music. Rather painting endures and displays as lifelike something that is in fact on a single surface.<sup>61</sup> The painter makes his work permanent for very many years, and of such excellence that it keeps alive the harmony of those proportional parts which nature, for all her powers, cannot manage to preserve. How many paintings have preserved the image of a divine beauty which in its natural manifestation has been rapidly overtaken by time or death. Thus, the work of the painter is nobler than that of nature, its mistress!<sup>62</sup>

O marvellous science, you keep alive the transient beauty of mortals and you have greater permanence than the works of nature, which continuously change over a period of time, leading remorselessly to old age. And, this science has the same relation to divine nature as its works have to the works of nature, and on this account is to be revered.<sup>63</sup>

With painting images of gods are made, around which religious cults arise, in the service of which music is used as an adornment; semblances of those who inspire love are provided for lovers; beauty, which time and nature renders fleeting, will be preserved; and we are able to preserve the likenesses of famous men. If you should say that music lasts for ever by being written down, we are doing the same here with letters.<sup>64</sup> Yet words are less noble than deeds; and you, writer on sciences, do you not copy with your hand, rendering what is in your mind, just like the painter? . . .

If you, O musician, should say that painting is mechanical because it is carried out by exercise of the hands, I say that music is produced by the mouth, which is a human organ – not dedicated in this instance to the sense of taste any more than the hands are to the sense of touch.<sup>65</sup> If you say that sciences are not mechanical but cerebral, I say to you that painting is cerebral, and that, just like music and geometry, it considers the proportions of continuous quantities, while arithmetic considers discontinuous quantities. Painting deals with all the continuous quantities and the qualities of shade and light and distance through the science of perspective.<sup>66</sup>

That thing is most worthy that satisfies the highest sense. Therefore painting, satisfying the sense of sight, is more noble than music, which only satisfies hearing. . . . That thing which is in itself most universal and various in its subjects will be said to possess the most excellence.



10. *Mona Lisa*, Paris, Louvre.  
 'O marvellous science, you keep alive the transient beauty of mortals and you have greater permanence than the works of nature'

Therefore painting is to be preferred to all other occupations, because it embraces all the forms that are and are not found in nature. It is to be more praised and exalted than music, which is only concerned with pitch... Therefore, seeing that you have placed music amongst the liberal arts,\* either you should place painting there or remove music. And if you say that vile men can make use of paintings, music can be similarly corrupted by those who do not understand it.<sup>67</sup>

### Concluding arguments of the poet, painter and musician

There is the same difference between the representation of corporeal things by the poet and painter as between dismembered and intact bodies, because the poet in describing the beauty or ugliness of any figure shows it to you bit by bit and over the course of time, while the painter will permit it to be completely seen in an instant. The poet is not able to present in words the true configuration of the elements which make up the whole, unlike the painter, who can set them before you with the same truth as is possible with nature. The poet may be regarded as equivalent to a musician who sings by himself a song composed for four choristers, singing first the soprano, then the tenor, and following with the contralto and then the bass. Such singing cannot result in that grace of proportioned harmony which is contained within harmonic intervals. Alternatively, something made by the poet may be likened to a beautiful face which is shown to you feature by feature, and, being made in this way, cannot ever satisfactorily convince you of its beauty, which alone resides in the divine proportionality of the said features in combination. Only when taken together do the features compose that divine harmony which often captivates the viewer.

Yet music, in its harmonic intervals, makes its suave melodies, which are composed from varied notes. The poet is deprived of this harmonic option, and although poetry enters the seat of judgement through the sense of hearing, like music, the poet is unable to describe the harmony of music, because he has not the power to say different things at the same time. However, the harmonic proportionality of painting is composed simultaneously from various components, the sweetness of which may be judged instantaneously, both in its general and in its particular effects – in general according to the dictates of the composition; in particular according to the dictates of the component parts from which the totality is composed. And on account of this the poet remains far behind the painter with respect to the representation of corporeal things, and, with respect to invisible things, he remains behind the musician.

But if the poet borrows assistance from the other sciences, he may

be compared to those merchants at fairs who stock varied items made by different manufacturers. The poet does this when he borrows from other sciences, such as those of the orator, philosopher, cosmographer and suchlike, whose sciences are completely separate from that of the poet. Thus the poet becomes a broker, who gathers various persons together to conclude a deal. If you wish to discover the true office of the poet, you will find that he is nothing other than an accumulator of things stolen from various sciences, with which he fabricates a deceitful composition – or we may more fairly say a fictional composition. And in that he is free to make such fictions the poet parallels the painter,\* although this is the weakest part of painting.<sup>68</sup>

### Introduction on sculpture and whether it is a science or not<sup>69</sup>

Applying myself to sculpture no less than to painting, and practised in both to the same degree, it seems to me that I am able to form a judgement about them with little prejudice, indicating which of these two is of greater insight,\* difficulty and perfection.<sup>70</sup>

Sculpture is not a science but a very mechanical art, because it causes its executant sweat and bodily fatigue. A sculptor only need know the simple measurements of the limbs and the nature of movements and postures. With this knowledge he can complete his works, demonstrating to the eye whatever it is, and not inherently giving any other cause for admiration in the spectator, unlike painting, which on a flat surface uses the power of its science to display the greatest landscapes with their distant horizons.<sup>71</sup>

There is no comparison between the innate talent,\* skill and learning within painting and within sculpture, inasmuch as spatial definition in sculpture arises from the nature of the medium and not from the artifice of the maker.<sup>72</sup>

### The difference between painting and sculpture

... The sculptor undertakes his work with greater bodily exertion than the painter, and the painter undertakes his work with greater mental exertion. The truth of this is evident in that the sculptor when making his work uses the strength of his arm in hammering, to remove the superfluous marble or other stone which surrounds the figure embedded within the stone. This is an extremely mechanical operation, generally accompanied by great sweat which mingles with dust and becomes converted into mud. His face becomes plastered and powdered all over with marble dust, which makes him look like a

baker, and he becomes covered in minute chips of marble, which makes him look as if he is covered in snow. His house is in a mess and covered in chips and dust from the stone.

The painter's position is quite contrary to this (speaking of painters and sculptors of the highest ability), because the painter sits before his work at the greatest of ease, well dressed and applying delicate colours with his light brush, and he may dress himself in whatever clothes he pleases. His residence is clean and adorned with delightful pictures, and he often enjoys the accompaniment of music or the company of the authors of various fine works that can be heard with great pleasure without the crashing of hammers and other confused noises.

Moreover, the sculptor, in bringing his work to completion, has to make each figure in the round with many contours so that the figure will look graceful from all viewpoints. These contours cannot be made if the raised and lowered areas are not apparent, and they cannot be realised accurately without turning the form to see its profiles; namely, the contours of the concave and convex parts seen against their abutment with the air which touches them. But in truth this requirement cannot be said to rebound to the credit of the sculptor, considering that he shares with the painter the need to pay attention to the contours of forms seen from every aspect. This consideration is implicit in painting, just as it is in sculpture.<sup>73</sup>

The sculptor says that he cannot make one figure without making an infinite number, on account of the infinite number of contours possessed by any continuous quantity. It may be replied that the infinite contours of such a figure can be reduced to two half figures, that is, one half from the middle backwards and one half from the middle forwards, which, if correctly proportioned, will combine to make a figure in the round. These half figures, exhibiting the due relief in all their parts, will embody in themselves without additional assistance all the infinite figures which the sculptor claims he must make. The same claim may be made by someone who has to make a vase on a wheel since he must inspect the vase from an infinite number of aspects.<sup>74</sup>

The sculptor, wishing to carve in such a way as to render the intervals between the muscles and to permit the prominences of the muscles to stand out, cannot produce the required figure, other than in terms of its length and breadth, if he does not move around it, stooping or rising in such a way as to see the true elevations of the muscles and the true gaps between them. These features can be judged by the sculptor in this situation, and by such means the contours are recognised, otherwise he would never capture the profiles or true shapes of his sculptures. In this is said to reside the mental effort of sculpture, because he does not otherwise require anything more than physical exertion. He does not need any measure of mental activity – or we may say judgement – unless in rectifying the profiles of the

limbs when the muscles are too prominent. And this is the proper procedure by which the sculptor brings his works to completion.<sup>75</sup>

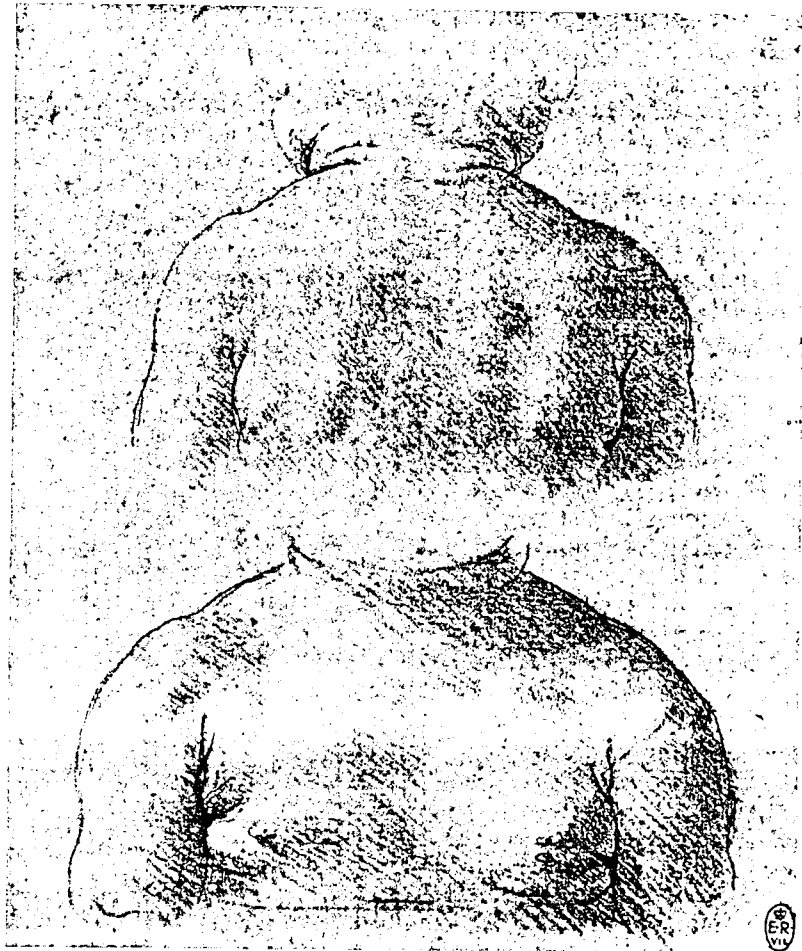
If you make a figure in half relief, to be seen from the front, you will not have to achieve more in your demonstration than the painter has to accomplish in a figure seen from the equivalent viewpoint – and the same applies to a back view of the figure.

But low relief entails incomparably more intellectual considerations than sculpture in the round, and it approaches painting with respect to its intellectual considerations, because it is indebted to perspective. And sculpture in the round incorporates nothing of such knowledge, because it simply adopts those measurements that are found in the live model, and, on this account, the painter learns sculpture more rapidly than the sculptor learns painting. But to return to the subject of low relief, I say that it involves less physical exertion than sculpture in the round but much more research, in that you must consider the proportional distances between the parts of objects that come first in sequence and those that come second, and between the second and third, and so on. And, given this, you will as a perpsctivist not find a single work in low relief that is not full of errors with respect to the lower and higher relief through which the parts of objects recede, according to whether they are more or less close to the eye.<sup>76</sup>

### How sculpture requires less talent than painting and lacks many natural characteristics<sup>77</sup>

Painting involves greater mental deliberation and is of greater artifice and wonder than sculpture, in that necessity requires the mind of the painter to transmute itself into nature's own mind and to become the interpreter between nature and art, showing how the causes of her effects are dependent on laws and in what way the semblances of the objects surrounding the eye converge on the pupil of the eye, as true images of the objects. It will be demonstrated how, amongst objects of equal size, some may appear larger to the eye; and of equal colours it will be shown how some will appear more or less dark or more or less light; and of objects placed equally low, it will be demonstrated how some will appear more or less low; and of those placed equally high, it will be demonstrated how some appear more or less high; and of equal objects placed at various distances, it will be shown how some will be less distinct than others.

The art of painting embraces and contains within itself all visible things. It is the poverty of sculpture that it cannot do this; namely, show the colours of everything and their diminution with distance. Painting shows transparent objects, but the sculptor shows you the things of nature without the painter's artistry. The painter shows to



11. Study of the chest and shoulders of an infant from front and rear, Windsor, RL 12567. 'the infinite contours of . . . a figure can be reduced to two half figures, that is one half from the middle backwards and one half from the middle forwards'

you different distances and the variations of colour arising from the air interposed between the objects and the eye; also the mists, through which the images of the objects penetrate with difficulty; also the rains, behind which can be discerned the cloudy mountains and valleys; also the dust, through which can be discerned the warriors who set it in motion; also the rivers of greater or lesser transparency, in which can be seen fishes playing between the surface of the water and the bed; also the polished pebbles of various hues, deposited on the washed sand of the river's bed and surrounded by the verdant plants under the surface of the water; also the stars at their various altitudes above us; and also innumerable other effects to which sculpture cannot aspire.<sup>78</sup>

The sculptor is not able to achieve diversity using the various types of colours. With respect to these, painting is not deficient in any way. The perspective used by sculptors [in reliefs] never appears correct, whereas the painter can make a distance of one hundred miles appear in his work. Aerial perspective is absent from the sculptors' work. They cannot depict transparent bodies, nor can they represent luminous sources, nor reflected rays, nor shiny bodies such as mirrors and similar lustrous things, nor mists, nor dreary weather – nor endless other things, which I will not list in order to avoid monotony.<sup>79</sup>

The sculptor says that low relief is a form of painting. This may be in part conceded as far as drawing is concerned, because it participates in perspective. As far as light and shade are concerned low relief fails both as sculpture and as painting, because the shadows correspond to the low nature of the relief, as for example in the shadows of foreshortened objects, which will not exhibit the depth of those in painting or in sculpture in the round. Rather, the art of low relief is a mixture of painting and sculpture.<sup>80</sup>

Next we may look at the arch-enemy of sculpture. Whether fully in the round or in low relief, sculptures are of no consequence unless they are provided with appropriate illumination, comparable to that under which they were made. Accordingly, if they are illuminated from below, the sculptor's works will look notably monstrous, particularly in the case of low reliefs, which are almost wiped out and appear in reverse.<sup>81</sup>

Sculpture is nothing other than it appears to be, that is to say, a modelled form surrounded by air and clothed in shaded and illuminated surfaces as are other natural objects; and this art is produced by two masters, namely nature and man, but the work of nature is the greater. If she did not render assistance to the work with shadows of greater or lesser darkness and lights of greater or lesser brightness, the whole undertaking would exhibit a colour of uniform lightness and darkness, like a flat surface. In addition to this, nature contributes



12. Storm over a valley, Windsor, RL 12409.  
'the painter shows to you different distances ... [with] rains, behind which can be discerned the cloudy mountains and valleys'

perspective, which by foreshortening helps round off the surfaces of the muscles on various sides, according to whether one muscle or another is in action to a greater or lesser extent. Here the sculptor replies and argues that 'if I did not make these muscles, perspective could not foreshorten them for me'. To which it may be answered that were it not for the assistance of light and shade you would not have been able to make the muscles, because you would not have seen them. The sculptor responds that 'it is I who give rise to the light and shade when I remove material in sculpting'. It is answered that it is not he but nature who makes shadow, nor is it his art. If he worked in the gloom he could not see anything because it could not be distinguished. Equally, if the material to be sculpted were to be surrounded with a mist of uniform brightness, he would see nothing other than the outlines of the material to be sculpted where they abut against the edges of the mist.

I wish to ask, sculptor, why you cannot bring your work to completion out of doors, surrounded by the universally diffused light of the air, in the same way as you can under a specific source of illumination which descends on your work from above. If you originate shadow as you please by removing material, why cannot you give rise to this effect in material sculpted under diffused light, rather than under specific illumination? Certainly you deceive yourself, in that your shadows and lights are made by another master to whom you are only the servant – preparing the medium on which the visual effects are imprinted. Therefore do not glorify yourself through the labours of someone else.<sup>82</sup>

The major cause of wonder that arises in painting is the appearance of something detached from the wall or other flat surface, deceiving subtle judgements with this effect, as it is not separated from the surface of the wall. In this respect the sculptor makes his works so that they appear to be what they are... The second major consideration essential for the painter is the subtle investigation which concerns the placing of the true quality and quantity of the shade and light, which nature produces by herself in the works of the sculptor. Perspective, an investigation and invention of the greatest subtlety in mathematical studies, uses the power of lines to make that which is near appear distant and that which is large appear small. In this respect the sculptor is helped by nature without any invention of his own.<sup>83</sup>

### The excuse of the sculptor

The sculptor says that if he removes more marble than he should, he cannot rectify his error as can the painter. To this it is replied that someone who removes more than he should is not a master, because a

master is required to understand the true science of his profession.<sup>84</sup> If he is in command of measurements, he will not remove what he should not, and therefore we may say that this fault arises from the executant and not from the material.<sup>85</sup> It is a poor argument to try to prove that the irreparability of lapses makes a work more noble. But I would certainly say that it will be more difficult to retain the credibility of the talent of the master who makes such mistakes than it will be to repair the work that has been ruined.<sup>86</sup> We well know that someone with practised skill will not make such errors. Rather, obeying good rules, he will proceed by removing so little at any time that he takes his work along smoothly. Moreover, the sculptor working in clay or wax can take away and add on, and when it is finished it can be readily cast in bronze. This is the final process and results in the most permanent sculpture, since that which is only in marble is susceptible to damage, which is not the case with bronze.<sup>87</sup>

Modelling is the sister of painting, as was affirmed by the ancients, being an art of less crashing and labour than the working of stone. It was acclaimed as mother by sculpture, in order that her works should serve as examples and guides. Sculpture avails itself of clay models, which come closer to our imagination. These are then measured with compasses, and can thereby insinuate figures of men, horses and whatever you wish into the marble. From this it is concluded that we are able to characterise sculpture as nothing other than a laboured imitation of modelling, involving the practice of carving marble with care and much time, and that it will be more elevated and perfectly realised the closer it approaches modelling. This is because it does not in itself lack draughtmanship, composing muscles and disposing contours, although not using foreshortening. All properties that are possessed by painting. Thus painting is held to be sister to modelling, from which it follows that painting is aunt to sculpture... Accordingly it has always given me much pleasure and delight, as can be seen by my various complete horses, and limbs and heads, and also human heads representing Our Lady, and complete youthful Christs and fragments, and heads of old men in good number.<sup>88\*</sup>

### [Conclusion]

The divinity of the science of painting considers works both human and divine, which are bounded by surfaces, that is to say the boundary lines of bodies, with which she dictates to the sculptor the way to perfect his statues. Through her principle, that is to say, draughtmanship, she teaches the architect how to make his buildings convey pleasure to the eye; she teaches the potters about the varieties of vases, and also the goldsmiths, the weavers and the embroiderers. She has

invented the characters in which the various languages are expressed; she has given numerals to the mathematicians; she has taught the drawing of figures to the geometrician; she has taught the students of optics, the technicians and the engineers.<sup>89</sup>

You have placed painting amongst the mechanical arts. Certainly if painters were capable of praising their works in writing, as poets have done, I do not believe that painting would have been given such a bad name.<sup>90</sup> Painting does not speak, but is self-evident through its finished product, while poetry ends in words, with which it vigorously praises itself.<sup>91</sup> If you call painting mechanical because it is primarily manual, in that the hands depict what is found in the imagination, you writers draft with your hand what is found in your mind.<sup>92</sup> With justified complaints painting laments that it has been excluded from the number of the liberal arts, since she is the true daughter of nature and acts through the noblest sense. Therefore it was wrong, O writers, to have left her outside the number of the liberal arts, since she embraces not only the works of nature but also an infinite number that nature never created.<sup>93</sup>