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PICTORIAL SPACE IN RELATIONSHIP TO  
BELIEFS AND COGNITIVE STRUCTURES

THE *LXION* ROOM  
THE BARDI CHAPEL  
THE *NYMPHÉAS*

Volume II

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by

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## CHAPTER THREE

**The *Nymphéas* (the Water-lilies), at the Musée de l'Orangerie, Paris, France**

**Claude Monet, 1924**

### 3.1 General context

Claude Monet's large-scale paintings, the *Nymphéas* or *Water lilies*, are housed in a former conservatory, known as the Orangerie<sup>1</sup> (fig. 3.1), located in the south west corner of the Jardin des Tuileries, an Italian style park initiated in 1563 by Catherine de Medici as the *airing* place for members and visitors to the Chateau she had built next to the Louvre in Paris<sup>2</sup>. The Tuilerie was an innovation in garden design, being the first garden in France to make the idea of 'taking the air' fashionable as part of French court life. It was also innovative in that the aristocracy, while strolling outside, were now promenading their fineries, something previously confined to interior salons. The French garden designer Claude Mollét used the Tuileries as his model of how a garden should be designed, but between 1665 and 1672 Andre Le Nôtre redesigned the Tuilerie gardens by installing terraces along the riverbank and opened up a central axis for a large promenade from which he intended to have other avenues project outwards. Le Nôtre's central axis of the gardens is now the key to the central axis of Paris. Georges-Eugène Haussmann, the master-mind<sup>3</sup> behind the nineteenth century transformation of Paris, incorporated the central axis of the Tuilerie gardens following the destruction of the palace itself by the Communards in 1871<sup>4</sup> and applied Le Notré's idea of radiating secondary axes as one of the principle features (fig. 3.2).

The Orangerie in which the *Nymphéa* paintings are installed is located parallel with the principle axis. The present building<sup>5</sup> was erected in 1852 to house the orange trees in the winter that decorated the gardens during the warmer periods of the year. This mixing of exotic vegetation, like orange trees, with local flora was remarked on by Timothy Nourse, the seventeenth century landscapist who wrote:

The second Garden will be like a terrace to the first; and in the sides of the Bank which parts the two gardens and looking full at the Sun, we have a place for greenhouses...for Orange and Lemon Trees...The [combination of the] Natural and Artificial deceive us into the belief of a real Wilderness furnished with all the Varieties of Nature<sup>6</sup>.

The utopian desire to recreate the original garden – the original moment of Eden in which *all of nature and man co-existed peacefully* – in one form or another is an ongoing

theme that continues with indoor plants and gardens in, for example, the interior of shopping centres today. Referring to the Tuileries, B at Louis de Muralt (1665-1749) wrote: "*Its great beauty consists in bringing (as it were) the country into the City*"<sup>7</sup>. This echoes Monet's idea behind the decoration and their location in the centre of Paris. Roger Marx paraphrases Monet as saying: "*The visitor to the room [with] his nerves overstrained by work will be able to relax there, as in a restful example of [still] water*<sup>8</sup>; and for one living in it, this room will offer the heaven of a peaceful meditation in the middle of a flowered aquarium"<sup>9</sup>.

### 3.1.1 The importance of the site to Monet

Monet had envisioned bequeathing France a commemorative gift<sup>10</sup> on behalf of the First World War effort that had culminated in France's liberation from German occupation. Georges Clemenceau, friend of the artist and Premier of France, parliamentarian, physician, foreign correspondent, publisher, essayist, biographer and, importantly, a passionate gardener, not only accepted this gesture on behalf of France but also encouraged the realization and completion of the *Nymph ea* project. In 1914 Clemenceau visited Giverny, as he did frequently, to console Monet who had recently lost his son Jean. It was to him that Monet spoke about his sadness of now being too old to execute his long-standing desire to embark on a large-scale work as a gift to the nation. Clemenceau encouraged him to follow through with the idea. Shortly after this exchange, Monet initiated the building of a third studio in order to execute and set up works of the scale he required<sup>11</sup>.

Monet, nevertheless, had fears about the potential location of his gift, as recorded in a conversation with the Duc de Tr evise during a visit with Monet on the occasion of the artist's eightieth birthday in 1920. The duke, after being shown the *Nymph eas* in progress (fig. 3.3), exclaimed that it would not require a great deal of imagination to erect a spacious pavilion to house them. When Monet replied that that was exactly what he intended to do with them, the duke's response was that he didn't understand what then was delaying the installation. Monet's answer – taken from the duke's transcript – shows his deep concern.

[...] And I dear sir, do. I am bequeathing my four best series to the French government, which will do nothing with them? [...] Because I didn't like the idea of all my paintings leaving the country. In spite of my dealer's pleas, I am donating these [Nymphéas] and spelling out my conditions. After all am I not entitled to do so? I need a site in the centre of Paris (otherwise why not the abattoirs?), a circular shape for which I'll make the specifications (otherwise why not a circus? [...]) Let's hope we shan't have to end up with a debate in the Chamber of Deputies<sup>12</sup>!

Certainly the Orangerie could not be more central to Paris, and Monet's *Nymphéas* resonates with the site of the innovative history of the Jardins des Tuileries and the original purpose of the Orangerie. There is a rather enjoyable parallel between the gardens of the Tuileries, which introduced the aristocracy to the promenade *en plein air*, and Monet's *Nymphéas* painted at least from studies *en plein air* – the culmination of a painter's life committed to painting from nature. The parallel proved to be persuasive, and the *Nymphéa* paintings became, as we know, an installation in two oval rooms simulating an outdoor setting – specifically a “water” garden – inside a building – inside the former Orangerie.

### 3.1.2 The nineteenth century French painter's promenade *en plein air*

The landscapes of the Barbizon school of painters broke with the tradition of the allegorical paintings of the European eighteenth and early nineteenth century<sup>13</sup>. Their landscapes were for the first time shown in the Salon of 1831, sketched and painted from nature, or *en plein air*, in and around the forest of Fontainebleau on the outskirts of Paris near the village of Barbizon<sup>14</sup>. Their work appealed to a public that had already come to appreciate contemporary outdoor views of France painted by the English artists, as well as seventeenth century Dutch landscapes. Monet was initiated to *plein air* painting by his mentor, Eugène Boudin, who – in turn – had been influenced by the Barbizon school<sup>15</sup>. "Boudin said [to me – Monet] do what I do, learn to draw well and appreciate the sea light and blue sky. That was how I came to understand nature and learn to love it passionately, and how I became interested in the high keyed paintings of Boudin"<sup>16</sup> (fig. 3.4).

Boudin commented on the difficulty of painting these waterscapes from nature: "I gaze on this light that inundates the earth, that quivers on the water,[...] and I grow faint to



*realize how much genius is needed to master so many difficulties, how limited is the power of man's mind to put all these things together in the brain*"<sup>17</sup>.

Many of Monet's letters to friends or his wife Alice echo this struggle, the consequence of moving out of the studio, away from the fixed narration of history painting's past events and into the less predictable, living, changing, breathing world space of the present<sup>18</sup>. Excerpts from a letter written to Alice Hoschedé, from Fresselines in April 1889 illustrate well Monet's difficulties with the rapidity of changing weather condition.

[...] What's more, the weather is wearing me down, [...] but the endless succession of clouds and sunny intervals couldn't be worse, [...] but the thing that is upsetting me the most is that with the drought the Creuse is shrinking visibly and its colour is altering so radically that everything around it is transformed. In places where the water once fell in green torrents all you see now is a brown bed. None of the paintings are right as they are, and I was counting on the last few days to rescue them.<sup>19</sup>

The contribution of Monet's water lily decorations to the evolving history of the sixteenth century Tuileries as a public park in the centre of Paris has to be also understood as part of the process known generally as the eighteenth century Enlightenment. This had many facets, too numerous to detail here, but its most obvious historical events include the American Revolution followed closely by the French. These political revolutions, and the social idealisms and technological innovations they inspired, all caused radical interventions into peoples traditional ideas and ways of life<sup>20</sup>. New potential forms of government, new labor relations and a radical changing relationship to the natural world collectively and individually came slowly and episodically into focus, bringing with it all the associated human and social complexities. In this context, the social, ideological and emotive spectrum swung from one extreme to another like a pendulum advancing, retreating and again advancing. Social change is, after all, never 'efficient', despite the promise put forward by the new technology's more efficient time keeping and measure<sup>21</sup>.

Like many of his contemporaries, Monet absorbed and responded to the social idealism rife during the first half of the nineteenth century. The other side of the coin, however, was represented by that model of aristocratic artifice – the faux garden. The latter was adopted by a socially ambitious bourgeoisie with all its pretensions and nostalgia for antique conventions

intact, most visibly represented by the royal palace. The bourgeoisie's imitation of the aristocracy extended to promenading in their fineries *en plein aire* in formal parks, as evident in Manet's 1862 *Concert in the Tuileries* or Renoir's 1876 *Le Moulin de la Galette*. Very different, however, is Boudin's 1869 gathering of the public on an empty uninhabited beach in *The Beach at Trouville*, or Manet's 1865 *Luncheon on the Grass* – which makes no reference to public parks and is framed in such a way as to appear to take place in an informal natural setting. It is in this spirit that Monet 'rescued' the Tuileries from the threat offered by the inherited model of nostalgic artifice. The presence of Monet's *Nymphéas* in the Orangerie was intended to share with Boudin the same immediacy to the original *natural* moment that for Monet constituted the first moment attendant on an awakening sense of observation, response, and feeling<sup>22</sup>: "*It was as if a veil was torn from my eyes and I understood what painting could be*"<sup>23</sup>.

Armed with this revelation, Monet sought to convert the middle class elite from their post revolutionary romance with nostalgia by recording only the present – in effect a refusal of history's dominance. The aim was to record in real time a real garden, the real experience of a modern eye – one observing the living, changing, breathing spatial world. In a word: modernity. This makes Monet's *Nymphéas* in the Orangerie not just a work, but a *site* of historic significance; in its challenge to tradition at the cultural centre of Europe, the *Nymphéas* is – like the murals in the Bardi Chapel – a critique of history<sup>24</sup>.

### 3.1.3 Industrial technological innovations change the idea of observation, evolve a different sense of scale, time and place

If it is vital to understand the social dimensions of the Enlightenment, it is also vital to understand the importance of nineteenth century technological innovations in mechanisms of observation that contributed to the *techniques of the observer*<sup>25</sup>, as Jonathan Crary calls them. Famously, of course, the invention of photography and its manipulation of time, particularly in its application to multiple sequential stop actions of movement<sup>26</sup> by Muybridge, and through Jules-Etienne Marey 's panoramas and large scale dioramas<sup>27</sup> that provided the basis for virtual three dimensional movement. The invention of electricity provided the possibility of switching on and off light to illuminate objects at will. All of these techniques of

observation contributed to Monet's ability to believe in the objectivity of the instantaneity of the split-second, the stop-dead moment of observation and being. Monet found that this moment was dramatically orchestrated in all of its extreme fluctuations in the weather conditions that affected his perception of luminosity, colour and haptic sensations of atmosphere – as well as his emotive state: "*A landscape does not exist in its own right, since its appearance changes at every moment. [...] The air and the light vary continually*"<sup>28</sup>; "*I am in increasing need to render what I experience*"<sup>29</sup>; "*The further I get the more difficult it is for me to convey what I feel*"<sup>30</sup>.

Another new perceptual sense of time and space that coloured the last half of the nineteenth century were steam ships that revolutionized intercontinental travel, steam locomotives that could cross continents, and cars that changed the urban landscape. They connected and blurred in new and faster ways previously clear separations between cities and country-side, countries and continents. This redefined the meaning of social and economic relations with respect to space and time, both within the cities themselves and in their interrelationship with – and dependence on – natural space: the land. As space and time contracted, the concept of audience expanded as man's capacity to reach beyond the local came to be recognized<sup>31</sup>. For example, Patrick Geddes (1854-1932) – who styled himself a 'Comprehensive Synthethizing Generalist' – founded the Outlook Tower, the camera obscura observatory in Edinburgh in 1892. In its small circular room he could observe a panoramic real time view of both the city and its surrounding countryside. It was in this room that he founded the world's first sociological laboratory by recording how meteorologists, geologists, geographers, zoologist and botanists dynamically interacted. He fostered the view that it would be more productive if interdependent relationships could be developed between different disciplines that would bring urban and rural culture into the same fold. By unifying previously unrelated areas of knowledge, Geddes attempted to create an epistemological or intellectual counterpart to the understanding of nature as a unity that was held at this time. While calling the process one of *synthesis*, he gave this new relationship a new word: *Synergy*. In 1903 he himself published *The Study in City Development* with the intentions of having his findings applied<sup>32</sup>.

It must be borne in mind that this impulse to work out a new understanding between the natural order and the urban community with its ever-increasing industrialization and technology was part of the Paris that Claude Monet grew up in. For example, in the year of Monet's birth, 1840, César Daly launched the magazine *Revue Général de L'Architecture et des Travaux Publiques*. In it was discussed the building of roads, canals, bridges, viaducts, tunnels, as well as the expansion of agricultural land and the improving of soil. It was an appeal to architects and engineers who were responsible for urban design.

[...] They presided over the constructions that shelter human beings, livestock and the products of the earth; that it is they who erect thousand of factories and manufacturing establishments to house prodigious industrial activity; who build immense cities furnished with splendid monuments, traversed by straightened rivers encased in cyclopean walls [...] undeterred by any difficulty, inscribed everywhere in the land through durable and well-made monuments, testimonials to the power and genius and the work of man; when one reflects on the immense utility and the absolute necessity of these works and the thousands to whom they give employment, one is naturally led to appreciate the importance of the science to which we owe these marvelous creations and feel that the slightest progress in these matters is of interest to all the countries of the globe<sup>33</sup>.

### 3.1.4 Political and social reforms

This thinking on a global scale is well illustrated by the extent of the ideological ambitions of Karl Marx and Friedrich Engels who published – in English, French, German, Flemish, Italian and German – on February the 24<sup>th</sup> 1848 the Manifesto of the Communist Party<sup>34</sup>. The Manifesto laid down the principles for the proletariat revolution, while Haussmann, motivated in part by the threat to social order, laid down the boulevards. It should come as no surprise that this new sense of scale led to the recognition of the need to rethink the allocation, reorganization and meaning of physical and structural space – an early form of urban renewal, the vision of a progressive, or progressivist, modernity<sup>35</sup>.

The City of Paris in the nineteenth century consequently found itself as the primary site of response to this awareness of new social complexities, highlighted against the failure of the 1848 socialist revolutions when Monet was only eight years old<sup>36</sup>. Alex de Tocqueville, the eminent French political commentator, wrote in early 1848 that Europe was in a new grip

of social revolutions, and indeed 1848 saw the first widespread phenomenon of insurrection. In Paris, the monarchy was overthrown and the republic immediately proclaimed. Berlin responded by moving towards a federal or unitary assemblage of principalities, and Milan towards a united Italy<sup>37</sup>.

Within four years of the failed insurrection, Baron Haussmann in 1852 under Napoleon III was implementing plans to redevelop the city of Paris. Haussmann fostered the perception of a total break with the past while apparently innocently implementing the Emperor's will<sup>38</sup>. As part of his agenda he took into account the need for, and presence of, factories and modes of transportation, and their relationship to economic success, including labor relations within the city and its urban environment. Monet himself was not immediately affected by so much urban disruption, although its effects of displacement were well recorded by political cartoons of the time. As early as 1852 Honoré Daumier illustrated the plight of homeless displaced Parisians in the midst of its demolitions<sup>39</sup>. Under Haussmann, writes David Harvey, Paris evolved into a distinctly capitalist form of modernity. To paraphrase:

The rebuilding of Paris ] shaped the capital city in very specific ways. While previously it was shopkeepers and artisans who were the majority of property owners, by the 1880's it was a group known solely as landowners with pure commercial interests that dominated the property market. Only in the periphery of Paris did shopkeepers retain a significant presence in property. Unlike the landowners, they were more sympathetic to the needs of their own and of the proletariat classes, and made an effort to accommodate their fluctuating incomes and the calamities that could be caused by unforeseen deaths or bad health<sup>40</sup>.

### **3.1.5 Monet leaves Paris permanently for the country-side**

It was a combination of the new high cost of living in the city and the fact that the outskirts were now well connected by trains to Paris that made living in a small town in proximity to the countryside so appealing to Monet. It was stopping off to paint in the small town of Zaandam in Holland after his return to France from London that provoked his move with Camille and his son Jean in 1871 to the town of Argenteuil<sup>41</sup> on the Seine near to and north west of Paris. It is at Argenteuil that Monet also began to paint his first garden. However, after the birth of his second son Michel in 1878, his wife Camille became mortally ill. Added

to this, financial problems prompted him to accept the invitation to move to the chateau of his patron Alice and Ernest Hoschedé. However Monet during this time maintained a studio in Paris. The death of his wife Camille the following year and the bankruptcy of his patron Ernest Hoschedé, who abandoned his family, contributed to Monet and Alice Hoschedé's move with both their respective families, first to Poissy and finally to their last home at Giverny (fig. 3.5). It is in Giverny in 1901 that Monet begins to paint the first garden series. Then in 1903 he begins the second Garden series, in which he concentrates on the pond and its reflections, a subject matter that becomes seminal to the *Nymphéas*<sup>42</sup>.

**3.1.6 The pond at Giverny: the subject for the *Nymphéas* as a nineteenth century metaphor – a distant echo of the Roman tradition of decorated rooms and Greek myths. Narcissus understood here as the parallel reality of the paradox of effect. Affect or surface, and affect as depth**

There is an anecdote related by the Duc de Trévisé concerning a mysterious Italian Lady. She sent a letter to Monet proposing a complete wall decoration. It arrived, according to the duke, at Monet's home just when he was in serious doubt as to his physical capacity – he was now in his late seventies – to begin and complete such a large-scale project as the decorations. *Its quite beyond my powers at my age* he writes to Charles Durand-Ruel from Giverny<sup>43</sup>. The Italian Lady suggested to him, one presumes unaware of his own plans, that he should make decorations for an *almost* circular room, with *a beautiful horizon of water*<sup>44</sup>. The idea of wall decorations that simulate a garden has a number of important predecessors. Both Catherine de Medici in her desire for an Italian garden, and the mysterious Italian lady were no doubt aware of the ancient Roman tradition of formal gardens in Roman villas, and of the Roman innovation of painting the walls of rooms in fresco to simulate – among other subjects – formal gardens. The Roman naturalist and historian, Pliny the Elder, wrote of this innovation<sup>45</sup>, and centuries later the art historian Bernard Berenson wrote also in his diary of the experience on visiting the Augustan fresco of the *Garden of Livia* (fig. 3.6) from the villa of Livia at Prima Porta, a fresco that covers all the walls with vegetation and includes exotic orange trees, sky and birds to simulate an outdoor garden:

[...]How dewy, how penetratingly fresh the grass, trees and flowers...Bird songs charm one's ears. The distance in the Garden of Livia room remains magically impenetrable, veiled as it was in the gardens of Lithuania where I lived when I first came to awareness<sup>46</sup>.

Whether Monet ever saw this or heard of it is unknown. But it is with the same spirit that the contemporary art historian Thomas McEvelley speaks of his experience of Monet's *Nymphéas* at the Orangerie: [the decorations] "*are a model of the cosmic ocean-womb; they surround the viewer [...] the viewer is re-embraced by a sense of the eternity of the original moment*"<sup>47</sup>.

Both Berenson's and McEvelley's recollections speak of a feeling of awakening to the world as a state of parallel realities or paradox. In Berenson's case, the paradox is the *magically impenetrable distance* or, one might say, distance-space since 'impenetrable' leaves no space; for McEvelley it is *the eternity of the original moment* – the *impossibility* of the eternity of a finite moment. Both reflect the same contemporary paradox of deconstructing totalities. This very paradox confronted Monet in his recognition of what painting could be: "*It was as if a veil was torn from my eyes and I understood what painting could be*"<sup>48</sup>.

The original moment, reenacted, offers the sensation of emerging from a completely enclosed presence of water, or the amniotic fluid of the womb, at the moment of birthing. This resonates with the form and content of the *Nymphéas* decorations. Monet's statement – in the moment when the veil is torn from *my eyes* – recognizes that the presence of always becoming, and the moment of consciousness of the external world, occur simultaneously. In the nineteenth century, no less than for Roland Barthes in the twentieth, there was apparent a recognition that what conflicted the individual was the simultaneous presence of doxa, or convention, and para-doxa – the always confounding escape from expectation. "*At once the biological – [affect] and the rhetorical – [description] The text extends itself, it is a result of a combinatory systematic (an image, moreover, close to current biological conceptions of the living being*"<sup>49</sup>.

We can see this, for instance, in comparing Geddes concept of synergy, the synthesizing of different energies, to Roland Barthes<sup>50</sup> suggestion that Marcel Proust invented a third literary form, neither novel nor essay, to accommodate the state of paradox in which the author may visit the text he wrote – rendering it at the same time fiction and autobiography, where an author has been simultaneously inscribed as one of his characters in the text. French poets of the period struggled with the same paradox and Monet could not have been ignorant of their struggle since he admired Mallarmé enough to present him with a painting that he permitted the poet to choose for himself<sup>51</sup>. Monet also wrote a letter to Mallarmé thanking him for sending a copy of his translations of the poems of Edgar Allan Poe, and according to Gustav Geffroy, Monet was an avid reader of current literature, including works by Balzac, Flaubert, Zola and Mirbeau<sup>52</sup>. In fact, Mallarmé was only one of several French poets who wrote about the complex emotive struggle of the individual and, like Monet, frequently referred to water or the sea as an important metaphor of the human condition. Its mercurial and tempestuous capacity to resemble the inner turmoil of man's affective and physical state can be seen in the poems of Stéphane Mallarmé, Tristan Corbière and Arthur Rimbaud<sup>53</sup>.

Monet's obsession is to engage the viewer in reading a painting between its *description* and its *affect*: becoming Mallarmé's lover – the third, the sharer the agent of change; or the lover who bathes in Rimbaud's poem of the sea that lacks edges; or Corbière's flaming sea.

Steven Levine<sup>54</sup>, in making an allusion between Monet and the Narcissus myth in his book *Monet, Narcissus, and Self Reflection*, applies the Narcissus myth as a metaphor for the male-centred culture of modernism. One can also read the Narcissus myth as an example of antinomy – the coexistence of two contradictory statements. Baudelaire, on the other hand, interprets the myth as a warning against the seduction of outward appearance in reference to a small marine sketch by Monet's mentor Eugène Boudin shown at the salon in 1859<sup>55</sup>. The myth of Narcissus, with the centrality of the reflecting pool, most obviously fits with Monet's water paintings, but it is also an interesting parallel to his way of looking. In the myth, Echo and Narcissus offer two parallel and mutually isolated voices: the voice of Echo is condemned to repetition, and was originally the pre-Hellenic birth-goddess. In an oracular



mood, she is the last echo of the Voice – the voice of creation – in which description, invention and rhetoric are destined to run parallel with but apart from the affective life of her would-be lover, Narcissus who, as we know of course, dies in the pool of birth to be reborn as a flower in a cycle of birth and death<sup>56</sup>. For Monet, the struggle, in other words, lies between representing the outward appearance or apprehension of the world while at the same time, in parallel, representing the deep currents of complex sensations about that world. In a letter to Geffroy he writes: "*I have taken up things impossible to do; water with grass that undulate in the depths [...] it is admirable to see, but it is enough to drive one mad to wish to do it. In the end I always attack things like that*"<sup>57</sup>.

After visiting Giverny, Mallarmé wrote of the pond at Giverny in *Le Nénuphar Blanc* as "*this crystal [...] her interior mirror*"<sup>58</sup> which resonates with Ovid's Narcissus in which the paradox present in the moment of awakening and consciousness of the new is its central theme.<sup>59</sup> As a painter, Monet began by painting flowers, and he was happy that flowers were what he painted in the end. "*I perhaps owe having become a painter to flowers*"<sup>60</sup>.

However, the flowers in the *Nymphéas* float on the surface of a pond, a mirror that not only supported the water lilies but – as Louis de Fourcaud described Monet's ambition – was inspired by the extraordinary possibilities of the water's surface as at once "*quelque chose d'inattendu et de désiré, d'intimement, poétique et absolue réel [...] plus d'horizon que la légendaire mer des Sargasses*"<sup>61</sup>. Steven Levine observes: "*The Grandeur and breadth that critics remarked in the series [Nymphéas] were a function of the way in which Monet looked at his motif, not the motif itself*"<sup>62</sup>.

While this matter of Monet's way of looking at his motif will be further examined through the *Nymphéas* decoration in the sections on belief structures that follow, the intimate observations of human nature can also be found in the literature of the same period. Arnold Hauser writes that Stendhal, and Balzac in 1842 writing *La Comédie Humaine*, are the first in European literature to make their subject "*our own*" personal existential struggle. They describe the "*sensibility that throbs in our own nerves*"<sup>63</sup>, which, for Monet, determined the pictorial and architectural spatial conception of the *Nymphéas*. Monet's contemporary, Marcel Proust, in *A La Recherche du Temps Perdu* wrote that what most attracted him to the

text was its ability to appeal to the most intimate within himself: "*C'est l'intime qui veut parler en moi, faire entendre son cri, face à la généralité, à la science De plus en plus nous nous prenons à aimer non [...] l'amour, l'art, le temp, la mort*"<sup>64</sup>.

The literary form that is invented by Marcel Proust rests on affect, in which – to quote from Ian Patterson – The Proustian narrator is fully aware of the existence of the ‘unthought known’ and the importance of the descent into the deepest layers of the self as he formulates his poetics in *Le Temp Retrouvé*<sup>65</sup>. The highlighting of joy or suffering that exists as an intense illuminated presence or a fading disappearance in time creates part of the space within the text. Proust is very insistent and precise in locating and referencing the exact effect of human relationships, and always in reference to his personal reception or projections. Memory, for Proust, is a device that further constructs time and space through language. Each of the two rooms decorated with the *Nymphéas* in the Orangerie articulates the subtle shifts in the spectrum of emotions and precise spatial relations as observed by Proust in this passage from his last book *Le Temp Retrouvé*:

When I established a cross-current between two sets of memories, that it came into my head that he was the same person as had brought about Albertine's departure from my house. But again this cross-current led as far as these residual memories of Albertine were concerned, to a train of thought that stopped in the middle of nowhere, several years away. Because I simply never thought about her. It was a train of memories, a line that I never went down anymore. Whereas the works of the ‘also-ran’ were recent, and that line of memories in permanent and active use by the mind<sup>66</sup>.

### 3.1.7 Preparation and design of the installation

Monet's passion for gardening equaled his obsession with painting<sup>67</sup> (fig. 3.7), and these two activities intersected after he settled with his family in the rural community of Giverny about an hour north west of Paris. After purchasing this property, Monet turned the traditional vegetable garden, near the front entrance to the house, into a floral display that resembled in its maturity a three dimensional paint box of intensely pigmented blossoms suspended in twenty six rectangular beds arranged in two rows<sup>68</sup>.

Then, in 1893, Monet acquired the land at the bottom of his property, *Le Pressoir*, between the railroad and the Ru River with the intention of constructing a pond that would be

fed by the river. The following year, the project was completed and the flowers planted. It was thought that Monet only sporadically painted it in the first few years of the pond's existence. In any case, according to the journalist Maurice Guillemot<sup>69</sup>, Monet in August of 1897 was already planning the decoration project: Monet took him at three am to the floating studio boat he had on the Epte, and after lunch invited him to sit under the shade of an umbrella near the lily pond. Guillemot wrote that [they admired]

[...] the glassy surface of the water float lilies, those extraordinary aquatic plants whose large leaves spread wide and whose exotic blossoms are curiously unsettling... and sometime later that day Monet took him to his studio to show him the ...models for a decoration for which he has already done some studies, large panels which he showed me in the studio afterwards [...] Imagine a circular room, its walls adorned with a water landscape dotted with [...] plants. The transparent colours are sometimes green, sometimes verging on mauve. The silent dead-calm water reflects the blossoms floating on it; the colours are fluid, with marvelous nuances, ephemeral as a dream<sup>70</sup>.

It should be noted that Monet's interest in producing decorations for interior spaces was not unique. Van Gogh had also expressed a desire to decorate his bedroom with sunflowers, and Monet's friend Renoir also carried out decorations. But it was Monet's friend and painter, Gustave Caillebotte, with whom Monet also shared the passion of gardening, who had begun just before his death in 1894 to paint panels of his greenhouse flowers for the decoration of his dining room.

While Monet had made sketches and preparatory canvases, he did not actually begin to work on the final decorations until 1914<sup>71</sup> (fig. 3.8). By 1920, Georges Clemenceau through the Ministry of the Fine Arts, tentatively secured the gardens of the Rodin Museum, known as Hotel Biron, in the centre of Paris for the construction of a circular building specially designed with Monet to house the original 12 panels for the decoration. Despite the fact that Monet had practically completed his works for this site, Clemenceau's fall from power caused the project to be abandoned until two years later the project was relocated to the Orangerie in the gardens of the Louvre in Paris<sup>72</sup>.

Steven Levine in *Monet and his Critics* points out the difficulties for a historian in interpreting all the separate testimonies of first or second hand accounts that surround the actual witnessing of the process involving the final disposition and conception of the water

lily installation<sup>73</sup>. However, it seems that the dealers René Gimpel and Georges Bernheim visited Monet three times: in the summer of 1918, in the late fall of 1918 and in February of 1920, by which time Monet still had not finalized the disposition of the *Nymphéas*<sup>74</sup>.

### 3.2 The Design of the two rooms in the Orangerie

In order to follow the conception of the final installation in the Orangerie, it is important to know something of the first proposal. That proposal led Monet to adapt the concept that he had been working on for twenty five years with the fresh eyes and fresh mind of an avid reader not only of contemporary literature, but of intellectual debates and popular and political news – not to mention the fact that he now owned several motor cars and clearly was immersed in the modern spirit of a new century of modernity.

The architect Louis Bonnier's design<sup>75</sup> for Monet's first installation site at the Rodin museum<sup>76</sup> consisted of a single circular room 18.5 meters in diameter in which Monet, according to this plan, intended to install twelve panels or four paintings that, as the critic and friend Thiebault-Sisson wrote<sup>77</sup>, enclosed the viewer in a continuous *spectacle of uninterrupted water, reflected sky and vegetation* (fig. 3.9). The final location for the Water-Lily installation at the Orangerie on January 14, 1922 offered completely different spatial proportions from the original conception. Monet and the new architect Camille Lefevre<sup>78</sup>, appointed by the Ministry<sup>79</sup> (fig. 3.10), redesigned the long rectangular space of the Orangerie, dividing the space into two separate but interconnected and now oval rooms<sup>80</sup>. This meant that Monet had to considerably rethink his proposition. This should not be imagined, however, to have been any less invested with an environmental conception. On the contrary, the environmental conception had by necessity become more complex. Not only did Monet have to consider the relationship of the paintings in a singular space, but he now had two separate spaces and the task of developing a meaningful relationship between them<sup>81</sup>.

Constructed of several panels, the two rooms share a similar architectural setting and a similar subject – the water-lily pond. However, each room's decoration, it has been suggested, treats distinctly different moments of the day and separate aspects of the pond.

Consequently, the unity of the work lies in its subject but not in a unity of time and space, subverting the expectation of a cohesive conception of place and experience. There has been a general consensus that the eight paintings, consisting of twenty-two panels that constitute the installation at the Orangerie could be considered as individually conceived works rather than as an integrated ensemble<sup>82</sup>. It should be understood that while Monet drew up a very tight contract as to his expectations for the site, he only included a tentative list of works and their disposition. He insisted on the right to make changes till the last moment, and that the installation<sup>83</sup> – panels and paintings – should be fixed to the walls according to his final instructions, since the murals were to be installed only after his death. Presumably this was so that their design could not be altered through persuasion.

### 3.2.1 A fully realized imaginative structure

I have visited both Giverny and the installation in Paris several times in order to make my analysis. I also visited the water-lily panel at the MOMA to confirm my interpretations, although I am writing strictly on the Orangerie installation. The logic of the paintings' disposition was confirmed when I made a scale model of the two rooms. Monet wanted the works installed after his death. This is significant. Since he *would* not therefore be involved in the installation, and would not personally experience the effect produced by the work, the logic of the configuration would have to assert itself *as a fully realized imaginative structure in his mind*. As I will be demonstrating through the following sections on belief structures, for Monet, the perceptual effect of the work would, without any possible doubt, be recognized as the conceptual apprehension or *anticipation* of that effect, untainted by any installational amendments or revisions. Ensuring that the installation would not be subject to change, Monet, in other words, risked all on the strength of his immediate perception and his conceptual rigour. The paintings that constitute the installation were all painted in Monet's studio, not *en plein aire*, and although Monet had a history of making many studies of the *Nymphéas* at the pond, he also used photographic references. This raises the interesting question as to how the photographically produced panoramic installations that were popular at the turn of the century were differently conceived from Monet's Orangerie installation?

Most recently, in an attempt to rationalize the order, it was suggested that the paintings in each room have four specific times of day, namely 9 am, 12 clock noon, three o'clock in the afternoon and six p.m. at night. I would like to suggest that these paintings are not conceived as individual variations on a theme of time, and do not in any case fit with Monet's idea of the serial<sup>84</sup>. Moreover, the sectioning of the day as suggested is inconsistent with Monet's daily life. This insight encouraged me to interpret from my experience with the installation how the paintings related not only to the architecture but also to each other. Because Monet contributed his ideas and final approval to the architectural design of the oval rooms, there is no doubt in my mind that he conceptualized the installation in its entirety. He had a history of working on ideas for a painting installation for over twenty years, I believe, however, that there is a clue in François Thiébaud-Sisson's monograph that he was preparing on Monet during the summer of 1920. What is interesting to realize is that Monet seems to have taken advantage of a bad situation. In his explanation to Thiébaud-Sisson of the history of the decorative project, he also confessed to the problems he had with his eyes and how his best vision was during the morning and evening hours when the light was less intense. I quote from Stuckey's article:

[...] Sometimes, mornings and evenings - for I had stopped painting during the most clear and brilliant hours [...] I said to myself, while doing my rough sketches, that a series of impressions of the ensemble (of the pond) taken at hours when my vision had the best chance of being accurate, would not be without interest. I waited until the idea took shape, until the arrangement and the composition of the motives little by little had inscribed themselves in my brain, and the day I felt I had sufficient trump in my hand to try my luck with the real hope of success, I resolved to act and I acted<sup>85</sup>.

In order to say with certainty how Monet reconfigured the existing painting of the first round room installation, it is necessary to know exactly which paintings were meant for the Rodin installation. In the plans of the round room proposed for the Rodin garden, Tucker<sup>86</sup> presents Louis Bonnier's architectural plan (fig. 3.9) within which the location of the proposed four paintings is not only indicated but also the titles and number of panels per work given. Opposite the entrance to this room is a four-panel painting called *Three Willow Trees* (fig. 3.9); on the left is a three panel painting entitled *The Cloud* (fig. 3.9); on the right is another three panel painting entitled *Agaphantus* (fig. 3.9); and directly behind the viewer

on entering is a two panel painting called *Green Reflection* (fig. 3.9). After a reconstruction of the four paintings, it has become clear that these works were carefully conceived as an ensemble. The left hand side of the *Three Willow Morning* (fig. 3.9) matches the left edge of *The Clouds* (fig. 3.9) and on the right with the edge of the *Agaphantus* (fig. 3.9). The panels entitled *Green Reflection* complete the circle in that its left side matches the *Agaphantus* (fig. 3.9), while its right side could be seen to align with the configuration of the *The Cloud* (fig. 3.9) panels. Because the documentation for these panels was made before they were finalized, what the absolute final appearance would have been for this first circular room is uncertain. However there seems to be a movement from light to dark in the general layout of this first proposal.

As already mentioned, the plans and the original disposition of the paintings and their panels for the Orangerie do not coincide with the final disposition of the Orangerie installation. What can be said for certain is that the two panels of *Green Reflection* now located on the east wall in Room One are presumably unchanged. The four panels of the original painting *Three Willows* was edited on the left, reducing it to a painting in three panels of two willows now located on the south wall of Room Two and titled *Clear Morning with Willows*. The eliminated left panel was reused for a second set of three panels of two willows titled *Morning with Willows*, now located on the north side of Room Two. Whether the cloud painting was in part or in whole recycled is impossible to tell, since if it was it has been changed beyond recognition. The fourth painting, *Agaphantes*, is reproduced in the catalogue raisonné by Robert Maillard<sup>87</sup> as three individual panels<sup>88</sup>, all of different width and height. But according to Gordon and Forge they were reworked and remained in Monet's studio until 1950.

The number of works, as given in the April 12<sup>th</sup>, 1922 contract for the Orangerie, were changed so that the number of panels increased from 19 to 22. The first list and titles of work must be accepted as a temporary measure while Monet re-conceptualized the Giverny installation. According to Michael Hoog's catalogue essay, in which he published the official documents of Monet's donation to the state, the contractual arrangement for the donation lists in the case of Room One four paintings titled: 1) *The Clouds*, (three panels); 2)

*Morning*, (three panels); 3) *Green Reflection*, (two panels); 4) *Setting Sun*, (one panel); and in the case of Room Two, only three works – namely: 1) *The Three Willows*, (four panels); 2) *Morning*, (four panels); 3) *Tree Reflections* (two panels)<sup>89</sup>.

Since Monet contributed his ideas and final approval to the architectural design of the oval rooms in which the paintings were to be housed, there is no doubt that he conceptualized the installation in its entirety – the space, the works for the space, and the space within the works – since all the walls are curved the paintings had to accommodate these variably curved walls. Monet not only left precise instructions for the location of each work, but the two rooms resemble in overall shape both a lily pad and the two parts of the water lily pond at Giverny, the shape of which is like a cell in the process of dividing.

### 3.2.2 Rooms One and Two

The public first enters Room One (fig. 3.11). It is the shorter of the two oval rooms at 20.3 meters, Room Two being 23.3 meters, but both rooms are the same width at 12.30 meters. All the paintings are positioned approximately 33 centimeter from the ground. While the paintings are 2 meters high, the rooms are double that at 4 meters (fig. 3.12). Monet was very insistent that the rooms should be evenly lit from above and approximate natural light as much as possible. The false skylights follow the curve of the room. It is important to appreciate that there are no corners that mark the end or beginning of any particular wall (fig. 3.13). The walls are separated by four real and two false arched entrances which function also as exits (fig. 3.14). In the architectural plans and the catalogue, each painting and each wall is identified with its geographical location, east, west, north and south (fig. 3.15, 3.16). As I will be arguing in the analysis through the belief structures, Monet was concerned that the location of the paintings' east-west and north-south references would be indexed to the actual east-west and north-south axes of their geographical location in the Tuilleries gardens, as though the viewer might have experienced them *en plein aire*. Therefore each wall decoration corresponds with this schema. The conception is complex. My argument is that the paintings in Room One are configured to represent evening. Here the sun sets on the west wall, *Setting Sun*, while the east is already enveloped in an approaching darkness – *Green*



*Reflections* perhaps refers to Jules Verne's *Le Rayon Vert*. Darkness closes in on both the north wall, *The Clouds*, and south wall, *Morning*, but should be re-titled *Evening*, where the sky's reflection in the pond's surface still radiates with an ambient light of varying reddish casts of the evening light. This gives a unity of space and time to these four works and produces an element of constancy. Because there are no trees represented in any paintings in Room One, a correspondence is set up between the centre of the installation and the centre of the water-lily pond, a centre now occupied by the viewer.

Before treating the iconography of each painting, I need to point out here that there is a logic in the movement of the viewer through these two rooms. We enter Room One at sunset. *The Setting Sun* moves across the room towards night – *Green Reflections*, and continues on to Room Two, which we enter in the darkest part of the sky at sunrise – *Reflections of Trees* on the west wall, before moving on and towards the morning mist and light – and the largest and most encompassing single work – *The Two Willows* – on the east wall. As we leave the installation, the last painting we see is the evening light of the sun setting towards night.

There is a significant twist to this satisfying logic, however, because in Room Two (fig. 3.15, 3.16) Monet constructs an inversion of the imaginary location of the viewer's self-identification. The viewer is *simultaneously* standing on the banks of all sides of the pond, accompanied by the willow trees that mark the presence of the shore, and is looking onto and into the pond. This place or non-place, this inversion, will be discussed in detail in the section on perceptual beliefs. In Room Two the time of day is early morning. The sun is just rising in the east – *The Three Willows*, the west is still in darkness – *Reflections of Trees*, and both the north wall's *Morning with Willows* and the south wall's *Clear Morning with Willows* are touched by ambient morning light that bears again a reddish cast.

### 3.2.3 Description of the *Nymphéas* decorations, Room One

As mentioned above, we enter Room One at sunset

*The Setting Sun* (fig. 3.15, fig. 3.17): west wall, a two panel painting; dark shadows of trees and bushes are cast, covering the left half of the left panel and the whole right panel. It

is between them that a rose-tinted sunset is reflected from above, while below aquatic plants appear on the bottom left. On the surface of the water float water lily pads with the flowers appearing to be closed.

*Green Reflections* (fig. 3.18): east wall, a two panel painting; eleven patches of lily pads sit at various positions on the surface of the water. The flowers appear both open and closing. There is no sense of undergrowth rising to cut the surface of the water, which appears to be in impending darkness and primarily in tones of greens and blues.

*The Clouds* (fig. 3.19): north wall, a three panel painting; the left half of the left panel is in deep shaded reflections, and almost the entire right panel is equally shaded. In the remaining centre of the painting there are represented rose coloured clouds similar to those in *Setting Sun*, with intermittent patches of blue-sky reflections. While some lily pads are vaguely visible in the darker areas, their red coloured blossoms are small and closed.

*Morning* (fig. 3.20): south wall, three panels; both left and right panels appear to represent the view towards the edge of the pond from the centre on the water. On the right, the vegetation of land and pond appear to be merging in a variety of greens with the blue reflection of the sky in the water. Again in the centre of this painting, reflections of less well defined clouds in a deeper rose merge with intense strokes of blue reflections from the sky.

#### 3.2.4 Description of *Nymphéas* decorations, Room Two

In Room Two, (fig. 3.16) the time of day is without question early morning. The sun is just rising in the east, the west is *still* in darkness, and both north and south walls are touched by ambient morning light. I was able to verify this phenomenon of the shift from morning to evening light, which has helped to support my hypothesis, through observation and comparison in the original setting. I noted that the dark slate-gray and green-gray blues that dominate the opposed paintings – *Two Willows* in sunrise on the east wall and *Reflections of Trees* on the west wall – faithfully represent conditions at Giverny, where the garden continues to remain in some darkness into the morning.

*Reflections of Trees* (fig. 3.21): west wall, a two panel painting; the dark blue-grey hued painting on the west wall with a very subtle rose colouration has at its centre the vertical reflection of a barely visible tree-trunk. On the surface of the water from the right side, patches of water lilies encroach towards the centre, while fewer patches are seen near the left side. No other vegetation is visibly marking the edges of the pond, and there appears to be a fluid undercurrent of plants undulating below the surface. The most sharply and crisply defined red-rose lily is positioned near the lower centre of the painting, giving the impression of looking down into the pond.

*The Two Willows* (fig. 3.22): east wall, a four panel painting; this wall is the most extensive and acutely curved wall surface. Near its outer edges on each side are thin and wispy willows truncated at both top and bottom. There is no evidence of the sky itself – only its light and subtle pink and blue reflection on the pond's surface that extends from one edge of the painting to the other. While the top of the painting is predominantly a rose blush, it merges with a predominant light blue reflection from the bottom – where barely opened patches of lilies skirt the painting's bottom edge. Looking at this expansive view gives one a feeling of floating in space with no clear footing.

*Morning with Willows* (fig. 3.23): north wall, three panels; a thick and solid willow trunk, with its foliage hanging to the pond's surface, appears to sit on the pond's edge near the left bottom edge of the painting. A second equally thick willow tree, situated one third in from the right hand edge of the painting, is cut off both at its top and bottom by the painting's horizontal framing. Both willows cast dark local shadows, making the bottom edge of the painting relatively obscure. The rest of the painting consists of rose coloured clouds and blue sky seen only as reflections on the pond's surface, itself signified by the water lily patches. There is a strong sense of verticality to this painting.

*Clear Morning with Willows* (fig. 3.24): south wall, a three panel painting; this painting also shows thick brown and truncated willow trees, more or less equally spaced from both right and left edges of the painting, that cut vertically through the painting. Their wispy green foliage, edged by blue, also appears like an umbrella casting local shadows. While there is a rose and blue cast from the reflections of the sky, the fine agitation of the water breaks up

any apprehension of cloud formation. The inward bending trunk on the right, and the surface of the water that appears lighter and brighter at its top edge, both give a sensation of moving out across the surface of the water into an undefined space.

Interestingly, despite many attempts to identify this installation with the actual scenery of the pond at Giverny, the installation is clearly a *fiction*. Bearing in mind the logic I described above in the movement of the viewer through the rooms, there is a paradox established involving the displacement of the viewer's location from the centre of the pond in Room One to the *fictional* shore in Room Two. The viewer has been transported both in space and in *reality*. In the sections that treat the various belief structures of the period, this chapter hopes to shed some light on how to account for what must now be experienced as an abrupt shift in narrative. From Room One to Room Two a suspension of one kind of belief must be suspended – if not replaced – with another.

### **3.3 Belief categories: Perceptual Beliefs, Philosophical Beliefs, Spiritual / Beliefs, Scientific Beliefs (concerning the optical system), Mathematical Beliefs, Medical Beliefs (concerning the body)**

#### **3.3.1 Perceptual Beliefs**

##### **3.3.1.1 Eight sensations in perception – three wave lengths (colour) and luminescence, horizon line, framing, perspective, monocular vision, scaling, motion, line and mass, texture**

###### *Three wave lengths (colour) and luminescence*

Cezanne often visited his friend Monet at Giverny, and once made the comment: "*The sky is blue, isn't it, and it was Monet who first noticed it [and, he added] Monet is nothing but an eye, but my God what an eye*"<sup>90</sup>.

If that might seem an ambiguous compliment, one that many others made on Monet's behalf as well, the artist himself proudly stood by his commitment to what was at the time described as retinal truth. The historical logic for that commitment, and the challenges to its usefulness, has been the subject of extensive art historical research and discussion. But the question might be put quite bluntly: did Monet really paint what he saw? The cognitive scientist, Semir Zeki, asks precisely that, and comments further: "*The brain through its own*

*evolution, has built into its machinery those very elements which allow it to acquire knowledge about all forms, contemplation is always taking place within the confines of the brain. Monet could not have been any different*"<sup>91</sup>.

To answer that question is also to answer the nature of pictorial space in his paintings. There are two ways that Monet could have been looking at the *light* of a scene, since that is at least what he claimed how he saw – one patch of colour at a time. One factor in the depiction of colours is through the composition of their wavelength, which then is read as it is reflected at every point in the field of vision. The second factor is the sensitivity to the illuminant. Here, one area is compared against the other areas of illumination adjacent to it. The effect of this comparison is that it renders the colours as literally stable. This kind of colour–light perception would, taken on its own, suggest that Monet's colour vision was abnormal. There is, however, another way to colour vision, that of recognizing a colour that is locally correct – known as local colour in the scene – and replacing this local colour with another, as in Fauvism's subjective symbolic colour – Franz Mark's blue horses (*Blaue Reiter*) comes to mind. It would seem that the brain does not process local and symbolic colours in the same place in the brain. Zeki reminds us that Monet had a wish to see for the first time as though born blind, and paint the world without its tradition of visual history. The British art historian and critic, John Ruskin, a contemporary of Monet's, whose writing Monet highly recommended to a friend, believed that every landscape painter should know the specific character of every object, showing detail not for its own sake, but for the sake of beauty<sup>92</sup>: "*but if you ask him to think about any forms, to consider if he cannot find any better in his own head, he stops; his execution becomes hesitating, he thinks; and ten to one he thinks wrong*"<sup>93</sup>. Ruskin is anxious that history interferes with pure vision, the vision of the newly born.

[...]Everything that you see in the world around you presents itself to your eyes as an arrangement of different colours, variously shaded [...] painting depends on the recovery of what may be called the innocence of the eye; this is to say childish perception of these fleeting stains of colour, merely as such without consciousness [...] as a blind man would see them as suddenly gifted with sight<sup>94</sup>.

This seems rather obviously to ignore the context of history, or in the case of vision, the *illuminant*, which gives an overall stability. And I agree with Zeki here: it is exactly for this

reason that Monet was able, in fact I would even say compelled, to get back to his studio to re-work the paintings. Holding on to the memory of each point of colour as a cumulative impression without the interference of illuminant comparison is a very challenging exercise. It would be like looking at the forest to see that particular tree, which Zeki points out requires an intense mental concentration in negating the overall illumination that modifies the intense immediate moment. Ruskin prescribes for the painter an appropriate methodology:

[...]the choice for instance of a particular lurid or appalling light, [to illustrate something indecent or terrifying, choosing] a particular tone of pure colour to prepare the mind for the expression of refined and delicate feeling; and in a still higher sense, the invention of such incidents and thoughts as can be expressed in words as well as on canvas, and are totally independent of any means of art but such as may serve for the bare suggestion of them.<sup>95</sup>

Ruskin is advocating that the artist refuse to paint *contextually*, and instead paint every part completely in isolation without giving in to the overall illumination. The well-known psychologist, Patricia Churchland, points out that what is unique about colour perception is that we observe an object as having a constant colour, even when it is viewed under many different conditions of illumination. To which Edwin H. Land's experiments with light reception concludes that "*colour perception is not a function of radiant energy impinging on the photoreceptors, but a computed lightness values of objects at three different wavelength*"<sup>96</sup>. It would seem that Monet, despite what he might have thought, was intuitively deploying an illuminant comparison in the studio as a check on his *retinal* observations.

Painting the water-lily pond at Giverny, looking beyond and through the water at the reflections, would seem to exercise a different spatial perception. While there is no illumination value that constructs the space for the *Nymphéas* paintings, there is a constant colour factor in perception, which is part of the feature of memory-like facial characteristics. Is it possible to define through only these terms a pictorial field for the *Nymphéas*? Churchland says yes, but this is a new and different way of seeing because it places the emphasis on the computational method of representation through the tensor network, representing space as well differently from the sentential paradigm.

[...]The tensor network theory opens a door, through which we can begin to envisage a radically different paradigm in which *representations*, even at fairly abstract levels of organization, are interpreted as *points in phase spaces*, [each neuron jointly specify a point in phase space] and where tensorial transformations effect transitions between phase spaces<sup>97</sup>.

But Monet was not memorizing facial features, he was memorizing colour points and their accumulations. When his memory of a particular moment of a scene had faded he longed to go back to the site. There is an instance when his neighbor, Lilla Cabot Perry, wanted to buy a painting for a friend. Monet felt unhappy with the painting, and requested that she wait until he had a chance to revisit the sight to confirm the painting's truth – with respect to his memory of the individual instances of colour event in the scene itself. Moreover, while completing the large canvases for the Orangerie, Monet continued to paint *en plein air* not to practice painting, but to refresh his colour memory.

'Refreshing our memory', as we now understand it, is concerned with metrical relations between distinct possible positions; in other words, relations are determined by *a phase space* which varies in proximity from one incremental notation to the other Claude Debussy until a recognizable response pattern can be obtained – like the relationships between facial features. The phase space is not in that sense flat, because it has the ability to construct volume. Colour perception, with its constancy index, is therefore ideally suited to constructing a larger whole through what would seem – in Monet's case – a whole network of variable phase spaces<sup>98</sup>. When Monet instructed Lilian Cabot on his technique of painting, he tells her to forget what the objects are that she is painting, but just to look at the particular colour event – a little square of blue, a streak of yellow, an oblong of pink. The cerebral visual apparatus that was engaged by Monet to set down his particular way of seeing is calculated to produce similar responses in the viewer, the mechanism being that *colour volume* is not only an aspect of the pictorial space in the painting, but also an occupation of the space between the viewer and the events in the paintings. While it is only a visual occupation, the experience is very physical – and here Monet got his wish: the viewer experiencing the *Nymphéas* installation does not only see it but *feels* it. It is well known that a person who has been blind since childhood – but after their visual perceptual system has matured, on recovering their sight has spoken of it as a painful physical sensation in the eyes,

as though the objects perceived – their colour and light – physically attacked their eyes<sup>99</sup>. Similarly, when looking at Monet's paintings with their myriad of overlapping bright and relatively chromatically pure coloured marks, one does not so much feel the sensation directly, as sense it physically touching one's eyes – and there is no question that the paintings construct the sensation of touch in the space that they bridge between the viewer and the work. The mechanism for this lies in the visual cortex, which when no longer receiving visual input from the retina through the optic nerve, does not simply atrophy but has the ability to redirect and receive tactile input, increasing the tactile sensibility of many blind people. Perhaps Monet's secret dream of having been blind in order to see inadvertently heightened his own sense of touch as he concentrated on a particular aspect of vision rather than its whole potential. Monet lived in the environment that he wanted to emulate; he walked it daily, while back in his studio he produced the memory of the experience. He was constantly moving between the two, and this constant double engagement exercising the entire apparatus of his cognitive functions, is what informs his perception.

#### *Horizon line*

How can one account for the sizes and distances of objects when there is no conventional horizon? The *Nymphéas* project eliminates any view of the horizon, in that what is visible are only the reflections in the water of the sky, which are framed in such a way that there is no reference to an actual horizon, and all objects outside these reflections, trees or grasses, are cropped so as to defy location and comparison outside this frame. This then leaves only two certain references – the assumed position of the producer, and that of the viewer. As I note further on, the former can be detected, largely through implication. But in the *act* of viewing the paintings, the reference is our own physical presence, the only one that can in any way interpose a possible horizon. This involves both the viewer's relationship to the physical size and location of paintings on the wall, and the viewer's eye level with respect to these.

Gibson's model of visual perceptual analysis can be understood through the *optic array* that is specific to the viewer. Through this array, the horizon can be discerned by the height of an object whose base is located on the ground. In this case it is the canvas. The object will



intersect with the horizon always at the height of observation defined by the viewer. Since both the viewer and the object stand on relatively the same ground, the floor of the Orangerie, there is absolute parity. The horizon line is appropriately taken by Monet to be his own personal point of observation in the real scene, now transferred to the installation. His objective was to transfer to the viewer the real size relations he observed so that the viewer could share in enjoying the experience that gave so much meaning to his life. The horizon is therefore implied by his original presence and re-enacted by the viewer. I believe Monet felt it *should not* be represented as such. Horizon and texture gradient, in this case the proximity of relatively larger lily pads near the bottom edge of the canvas, conform with the oblique viewing angle and confirm the original point of observation, approximately at two thirds the height of the canvas – an implied position here on the canvas, but not explicitly represented<sup>100</sup>. There is, however, one subtly explicit instance – *The Clouds* in Room One (fig. 3.25, 3.26): on both sides of the painting there are dark mirror-image shape reflections that ever so subtly mark the surface of the water and give an instance of a horizon line just barely visible. This line coincides with Monet's own eye level.

### *Framing*

The experience of the pond is now represented as an installation, as a three dimensional panoramic re-presentation simulating the real experience. In Room One (fig. 3.15) the viewer is located on the pond, and observes the pond from the real centre in an allocentric relationship of the subject-object relation. In Room Two (fig. 3.16), walking on the shore around the pond becomes inverted, however, so that now instead of the pond being at the centre, the viewer is occupying the centre and looking back towards the water where previously there was a shore. This relationship bears no parallel to the original spatial experience; it is an impossibility in every way, a case of our suspension of belief made possible by the fact that at all points the presence of the water is projected towards the subject or viewer, making this – as John Campbell<sup>101</sup> suggests – an egocentric frame: it is subject relative.

Allocentricity involves being centred on something other than the body, the picture one has of the world independent of needing to make one's own position part of the thought: one

looks out into the world. The egocentric frame, or egocentricity, is the conscious construction of one's own position, which is also gravity related. It is the short-term body image that permits the subject to have a practical grasp of possible movement and how to act<sup>102</sup>. In ego-oriented perspective, *inside perspective*, the object is seen as affiliated with the ego; in allocentric-oriented perspective, *outside perspective*, has the object affiliated with the other<sup>103</sup>.

There is an inference system that depends on distance cues, such as an object measured against a regularly receding grid<sup>104</sup>. Monet presents the viewer with a perceptual frame that affects scaling by making the size of the canvas relatively close to the height of the viewer, and by a pattern of receding and diminishing lily pads. The framing of the water by the truncated trees on the north and south sides of Room Two again makes a direct relationship to the position of the viewer along the water's edge, but also acts as a way of suppressing the potential depth cues. The loss of information can have consequences on depth perception by depth compression. Truncation of the visual field confirmed that the experience of depth was greater in the non-truncated image<sup>105</sup>.

*Perspective: a hybrid of metric and projective*

A hyperspace is a phase space with more than three dimensions. The view presented of the pond – one that has depth, height, width and movement – is superimposed by a reflected set of other dimensional realities, such as sky, clouds and *their* movement. How is it possible to distinguish these overlapping realities, one real the other already a projection / reflection or mirroring? The phase space is a *coordinate* or *state* space; this space, Patricia Churchland<sup>106</sup> explains, creates a systematic relationship between the object, in this case the real pond including its reflections, and the visual experiences that it produces – which are transliterated by a different set of coordinates to become a two dimensional representation. All the coordinates of real space and motion are now collapsed into a different set of coordinates capable of the two dimensional re-presentation. One phase space tells the other, each in its own way in geometrical terms, how to transform by deforming one phase space to produce the other. Since the main objective is to transliterate perceptual experiences, the

equivalencies between the real experience and the collapsed image reconstruct perceived space by a different set of coordinates.

Using Gibson's optic array, Margaret Hagen<sup>107</sup> developed a set of invariants whose presence or absence defines one of four possible types of geometric pictorial space. The coordinates able to account for the multi-dimensional collapse and to selectively represent two-dimensional image have been systematized. While it is clear that the *Nymphéas* installation is a fiction based on a real place and real experiences, it is informative to examine it through these four models of possible spatial representation.

Whether *metric geometry* must have exactly the same size as the original to have perfect congruency is not immediately clear. In the *Nymphéas*, planes are parallel. The projective character, however, is not orthogonal. Yet there are, surprisingly, a number of invariants present in the *Nymphéas*. The perpendicularity of the tree trunks and branches, and possibly their size and distance as they exist in the real scene, seem to fulfill the requirements of the original exactly. There is also a horizontal parallelism in that the real representation is made entirely frontal and parallel with the real scene. There are other aspects of metric in the *Nymphéas*, namely the flipped over reflections of the sky-clouds. These reflections can only ever be metric, in that their appearance and their reflections are identical. It would appear that he repeated this phenomenon with some darkened or shaded vegetation, flipped over in the reflection, only here leaving any evidence of a horizon line – on the surface of the water horizontal to the ground plane. While the *Nymphéas* project aspires to having the same scale as the original scene, therefore creating a simulacrum, there are far too many other variants to qualify it as a true metric projection. Its importance I will be discussing later. Other perceived objects vary in size, shape, area, distance, angle, straightness, length, ratio of length, and cross ratio or textural gradient<sup>108</sup>. It's worth adding that non-convergent perspective has its advantages in that it is less vulnerable to incorrect viewing<sup>109</sup>.

*Similarity geometry* has the same shape but not the same size. The representation is literally a smaller version of the original, which the *Nymphéas* installation is not, and so we can say that this type of geometry is not an issue here.

In *affine geometry* the same shape is still recognizable. Planes are not parallel, and distance is multiplied by different constants for every line direction. Invariants include some parallelism and straightness. None of this, however, applies to the *Nymphéas* paintings.

The class of *projective geometry*, invariance and equivalencies, is large because projective invariances are so few. Planes are not parallel, projection is central, distance is subject to varying distortion. Projection divergent is not visible or evident on all sides. Invariants include cross-ratios (dealing with adjacent units of texture-gradients), harmonic division not possible to measure, co-linearity, straightness, between-ness, and textual gradient<sup>110</sup>.

I find that there are two important geometrical projective systems that overlap in the *Nymphéas* paintings – metric geometry and projective geometry. Metric projection offers a *real* presence. This is one of the most fundamental projective systems that small children use first in their drawing as they learn gradually to employ, in time, more complex projective systems<sup>111</sup>. Projective geometry has the greatest number of invariants; distance is subject to distortion, planes are not parallel, and texture gradients exist. Generally, however, the most characteristic would be projections diverging, or parallax, only implied three times but not directly constructed in the *Nymphéas*. Between-ness and scale changes in this sense are also present, but not necessarily with absolute regularity and not where one would expect it.

There are only three instances of suggested projective convergence. The apparently converging grasses of *Morning* (fig. 3.27) on the south wall of Room One (fig. 3.16) give an indication of a converging perspectival pictorial space. Another strategy Monet uses to achieve convergence is employed in a more subtle way – in both *The Two Willows* (fig. 3.28) and *Clear Morning with Willows* (fig. 3.29) – in Room Two, on the east and south walls respectively. Here closer to the top and at centre, Monet places a solitary lily pad on the water that draws the viewer's attention to this central point and acts like a point of convergence for the foreground. While this is a false point of convergence, the viewer's perceptual beliefs are suspended, and belief is aided by what at this point might be the intersection of this point with Monet's or the viewers own horizon line by which perspectival convergence is established. It takes very small amounts of information to make association

with memory. There are parallel streams of verbal memory and non-verbal systems, like vision; they are richly connected – and therefore whether it is by word association or memory, Monet needs very little information to convince the viewer of a horizon line on the water, one that is almost not there<sup>112</sup>. Because the view is always of the pond, its surface is always below the viewer, or axiometric. There are no cross-variants of points and lines that can give projective relations – projective perspective is primarily a matter of scale changes, not overt, vanishing lines<sup>113</sup>. However, as the observer or producer approaches the surface of the paintings, Barbara Gillam writes:

[...]As the surface moves closer to the observer, the angle from which it is viewed by the two eyes becomes increasingly acute and increasingly different, a frontal plane surface with a regular shape and pattern produces images in which both vertical and horizontal extents form gradients of size that are opposite in direction to the two eyes and vary in steepness with the proximity of surface<sup>114</sup>.

This might also have possibly affected Monet's sense of varying levels of planes on the water near the bottom edge, between one area of attention and another. There are also a number of different *stand-point* options: multiple, close to optical infinity, projection lines convergent, angle frontal, planes oblique and not intersecting. These are all in relationship to the brain system's processing of information about object properties – or *what* – and spatial relations – or *where*. Visio-spatial working memory gives information that can be acted on. The multiple positions possible for the viewer of the *Nymphéas* – moving along all walls or scanning the rooms from different directions – makes it possible for the viewer in memory to reconstruct not just a singular view, but an accumulation of coordinate spatial information that takes the information of near and far cues and reconstructs the totality of the environment through the visual and spatial *where* and *what* in the percepts of images<sup>115</sup>.

Because perceptual beliefs underpin all other beliefs, it is interesting here to speculate on Monet's relationship to both. Monet was not interested in the idea of recreating the landscape through a complex pictorial projective system; rather, he wanted to recreate through light, in the form of colour marks as a one-to-one with what he saw. This already is the very definition of metric projection, which is a-one-to one projection. It was important for Monet to persuade the viewer that this representation was a parallel event between

perception and representation. Monet constructed the most direct and childlike approach to his subject because he wanted to see as though he had never seen before – uncontaminated by convention. The fact that the metric projection of the reflected clouds neutralized some didactic aspects of projective perspective must have been important and a bonus to Monet, because he makes them an important part of his subject. There is parallelism and size constancy, and a metric flip, of the reflections.

#### *Monocular vision*

In the *Nymphéas*, the walls are curved, and there are discrepancies within the visually perceived environment because it is by its perceptual apparatus distorted in comparison with the physical environment<sup>116</sup>. In binocular vision the distance of perceived space does not depend on absolute distances, but for monocular vision, configurations with the same relative distance but at different absolute distances seem indistinguishable, provided no other cues exist for real space perception. But as Richard Gregory<sup>117</sup> showed with drawings and photographs, if the cues of flatness are reduced – in for example a drawing or a photograph – the illusory effect greatly increases proportionately.

For Monet there was a monocular advantage to two-dimensional picture viewing. Sheena Rogers<sup>118</sup> explains that while it would seem quite contrary to our understanding of monocular vision, in fact by closing one eye it is possible to *double the depth* within a two dimensional image that one perceives when both eyes are open. If, as it appears, stereoscopic information has a very strong flattening effect on perceived pictorial depth in two-dimensional images, this is in fact extraordinarily significant when looking at Monet's paintings. While I did not have an opportunity to return to verify this phenomenon at the Orangerie – the building and the *Nymphéas* have been closed for several years during massive reconstruction – I have however been looking at painted scenes to test this theory. Furthermore I have slightly enlarged the reproductions of Monet's installation (fig. 3.30), to no more than 9 inches in height and for the north and south wall 30 inches in length. Even at this scale there is a sense of illusory depth very present, for example, in *Morning with Willows* (fig. 3.31) and *Clear Morning with Willows* the trees and their branches have an incredible sense of volume, as though seen as a stereoscopic image, hanging three-

dimensionally over the water below. Suddenly the shadows on the water help to throw the whole scene further into relief. What also seemed in Room Two like a very shallow pictorial space in *Reflections of Trees* (fig. 3.21) on the west wall now becomes a complex of hanging willow foliage over the surface of the water with a real sense of space and depth. What is more extraordinary, what appeared on the water like discordant surfaces, now appears just like the variable views of the water's reflection that in their variations seem to merge unexpectedly as both surface and depth. The contrast between light and dark also appears to increase, as in the closing of an aperture, and there appears to be not only a greater illusory spatial clarity, but also a greater contrast from one level of mark-making to the other. The layers of marks appear more fused with binocular vision and much less fused, and more loosely independent of each other in monocular vision. In other words, the entire scene becomes much less atmospheric, much more three-dimensional and real, and much more easily read as a painted drawing.

Another aspect that is much more noticeable is the complementary edges along the trees trunks and leaves, and the white edges and highlights that Monet spreads around the edges of water lily pads, blossoms, edges of clouds, and grass. There is a definite sense of lightness for the viewer gliding over and into the water, and through the long hanging willows of dawn. The overhanging grass on both edges of *Morning* (fig. 3.20) are now clearly above the water, with their reflection below. The edges that embrace *The Clouds* (fig. 3.19) in Room One, which in binocular vision seemed flat, now take on mirror image reflections on the edges that mark the surface of the water, something not at all visible previously. Seeing these works as Monet would have seen them near the end of his life, as he repainted and adapted them to monocular vision, explains his urgency and also his measure of their sense of finish that nobody else would have understood. Monet had perhaps no idea how close the installation came to being a panoramic stereoscope, since with his monocular vision he himself became inseparable from his effect. To appreciate the impact of the *Nymphéas*, we, as binocular viewers, must ourselves become monocular. Like Monet, we should view the *Nymphéas* with a black patch over our left eye (fig. 3.33). I have tried this myself, and I can confirm the resulting effect of depth.

### *Scaling*

Binocular vision cannot assist in the judgment of scale in cases of 'absolute distance' – a blank field with no discernable features leading to a horizon: a calm sea, for instance. Even 'relative distance' – as when two or more objects in the field provide clues of scale – remains elusive to binocular vision when those objects or features are indistinguishable from one another in the distance, and there are no other cues present: for instance a group of sailboats on the far horizon<sup>119</sup>. Binocular vision requires cues of proximity if relative distance is to function as an indicator of distance or depth. Or, to reverse this, cues of relational proximity in space – scale, in other words – will reproduce the effects of binocular vision.

In the absence of binocular vision after 1916 or so, Monet used scale as his depth cue. While much of the water's surface has been emptied out, Monet nevertheless provides the viewer with lily pads that gradually diminish in size. This is most emphasized in Room One, in *Green Reflections* (fig. 3.34), on the west wall. The water lilies near the top of the painting appear not far out of reach, as their size diminishes very gradually. On the other hand, *Morning* (fig. 3.35) on the south wall has an abrupt scale change from the lily pads at the bottom edge to those in the centre and to those near the top of the canvas. This gives the impression of great distance between the front edge and the top edge of the canvas. There is another scaling cue in *Morning* (fig. 3.36). The scale of the grassy vegetation clearly visible on both sides appears to be near, while the lily pads diminish dramatically. *The Setting Sun* (fig. 3.37), on the west wall, has gradually diminishing scale changes of the floating vegetation as it appears to recede into the distance. This sense of verifiable scale is intentionally absent in *The Clouds* (fig. 3.38) on the north wall, which gives this painting a less secure certainty of spatial location at the centre. The dark open oval marks as they exist at the centre barely diminish in size towards the top edge of the canvas.

In Room Two, in *Reflection of Trees* (fig. 3.39), the diminishing scale of the closed water lilies and their pads is relatively small, giving this painting a very shallow pictorial field. Depth through scale in this room is present in *Morning with Willows* (fig. 3.40), which primarily represents reflected clouds. A generous distribution of lily pads on the water's surface that diminish beginning from the bottom edge of the canvas, and abruptly getting



much smaller near the top edge of the canvas, resonates with a sense of infinite distance. *Clear Morning with Willows* (fig. 3.41) in Room Two primarily has lily pads at its bottom edge, and only vaguely painted and dramatically diminished insinuations of lily pads near the top of the canvas – leaving a large undefined space in the middle and giving the sense of a very great distance. This sense of infinite space is somewhat diminished by the two willows on each side that frame the view, whose scale appears to be in proportion to reality. This is referred to as a pictorial constraint imposed by the artist<sup>120</sup>: instead of being able to expand into this space, the trees create a corridor that guides the viewer towards the east wall of *The Two Willows* (fig. 3.42, 3.43). On this east wall, the largest regularly placed lily pads are centred along the bottom of the canvas. These lily pads, dramatically diminished in size, appear to disappear off the top of the canvas, with one particular pad hovering in the middle ground; this however, is also dramatically diminished, creating a sense of great distance across an otherwise empty space or surface. This painting is the largest and consequently presents to the viewer the most dramatic panoramic curve, and it is framed by two slender and strikingly pictorial willows – Monet offers us here the most complete glimpse of the entire tree in all the paintings – whose greater height due to the visibility of the upper branches also seemingly increases the perceptual *height* of this wall as it appears to rise. Additionally, these two framing willows are much thinner than the other four willows in the room, and this has the effect of increasing their distance from the viewer.

There are two different ways that size constancy can be explained. For instance, in Monet's paintings, when we see a smaller version of the water lily pad near the top of the painting, we do not interpret it as smaller than the one closer to us – which is objectively larger; we read it instead as being further away. One explanation of this phenomenon of perception is that this is the *constancy property* of the sensory system, which directly correlates the representation of an object's size with the visual angle of an appropriate frame. A second explanation is that there is an inference system that depends on distance cues, such as an object measured against a regularly receding grid for example<sup>121</sup>. Both these explanations can apply to the *Nymphéas*. Monet presents the viewer with a perceptual frame that impacts on scaling clues by virtue of the fact that the frame or size of the canvases is

related more or less to the height of the viewer (constancy property) and by his pattern of receding and diminishing lily pads (inference system).

The scale that is indicated by the lily pads in Room One (fig. 3.44) is not consistent, and each painting is different. With respect to the longest axis of the room, on the east wall, the lilies are clearly delineated so that the water's surface seems near or proximate to the viewer; on the west wall, however, the lilies are less distinctly drawn, and merge with the reflected sun, rendering the water also proximate. With respect to the shorter axis of the room, the sense of infinite immeasurable distance – whether marked by the surface of the water in *Morning* (fig. 3.45) on the south wall, or the billowy absorption of the reflected clouds in *The Clouds* (fig. 3.46) on the north wall – expands and pushes both walls perceptually out into greater space.

The perception of scale produced by the lily pads in Room Two is not dissimilar from Room One (fig. 3.47), with the exception of the east wall. The trees on both north and south wall prevent the room from expanding freely, while the slender curved trees framing the east wall, aided by the corridor of trees on the north and south walls (fig. 3.48), push this room forward and out into ephemeral space, the east wall the deferral in time through space of eternity.

The effect of monocular vision on scaling for Monet was probably overridden by his intellectual understanding of size and space relations, because he seems to have imposed a logic that is not inconsistent with his thinking about the project. However, there may be a relationship between his inability now to see the middle ground, and the vast empty spaces of the water. Our knowledge of Monet's height in relationship to the paintings is easily discernable from photographs (fig. 3.49): the paintings are 2 meters in height, and Monet appears to be about 1.75 meters in comparison. His natural horizon in relation to the painting would therefore be about two thirds up on the canvas, and there are painterly events that take place more or less at this height. It is clear that he represented what was near and below him at the largest scale. The tufts of grass on the left side of *Morning* (fig. 3.50) appear disproportionately larger than normal if one were not aware that the tall grasses he grew near his bridge grew almost to the height of a man. But on the horizon-to-relative size

relationship, viewers have to use their own physical presence as a measure since there are no real horizon cues in the almost exclusively reflected surface of the pond. The *Nymphéas* installation, it can be said, carries *real* or body scale – Monet's and our own – in its lower two thirds, and then becomes projective towards the top<sup>122</sup>.

Finally, if, as Helmholtz<sup>123</sup> suggested, there are computational rules in distance perception to produce a coherent visual image that are true even in the youngest child, Monet – while perfectly aware of these possibilities – masterminded his own sense of space and time. Each internal pictorial space has also elements of mark-making that only erratically diminish in size – or not – depending on the subject. In the reflected clouds there is little difference in the size of the marks, close or far away, while on the other hand when Monet represents the water's surface there is a visible consistency in the size of the marks getting smaller with implied distance. In *Green Reflections* (fig. 3.51), in Room One, the vertical marks are consistent and regular – they do not diminish in size and therefore in distance as is the case for *Reflection of Trees* (fig. 3.52). Certain elements are also inferential and associative in order to bend the pictorial space in ways that conform to his end purpose: for instance, in Room One he widened the north and south walls, while compressing the east and west walls so that the actual space of the oval perceptually comes closer to being a circle.

### *Motion*

Perceiving motion involves more than simply the turning of the head and the movement of the eye – motion on the retina has to be rationalized or *governed* in order to be absorbed as coherent and not just a jumble of *image noise*. Consequently, the body – the brain – unconsciously calibrates the image of the body in motion with the image on the retina, subtracting, as it were, one from the other to arrive at a *true* representation of the relative movement of the object projected on the retina. In the case of clouds, as an example of peripheral and distant images – not much calibration need occur; they might act as a background movement but with little effect on perception. In the case of illusions of movement, as in images flashing on and off in rapid succession, the visual system *infers* motion<sup>124</sup>. The paintings in the *Nymphéas* installation take up most of the horizontal wall surface. However, they are interrupted by the interconnecting doorways and a section of

white wall between the vertical edges of the east wall. Monet creates light–dark contrasts between the canvases on the north and south side, and although there are white spaces in between the paintings – blanks – these invoke the reader, the reader who needs to establish connection, to create a coherent whole on one level of perception, while simultaneously registering the light–dark contrast<sup>125</sup>. A viewer walking very quickly from one room to the other would perceive a kind of strobe effect. While there is no doubt some residue of that is part of the unconscious perceptual experience, the cool–warm contrasts from one painting to the other also acts as a subtext. Monet lived in his ideal environment and in his studio he produced the memory of the experience: he was constantly moving between the inside and the outside. The experience of passing below his trees or through his rose arches would have produced on a sunny day a strobe-like effect of light–dark, cool–warm.

There is another movement that becomes apparent, in all of its subtlety: that is the perceptual movement of the shifting focus on the reflected *Clouds* (fig. 3.53) that appear to be *in* the water's surface, and the surface of the pond articulated by the marks of the wavelets and the lily pads. Due to the large scale of the paintings, the sensation is of falling down into undefined space in the former, or gliding across the surface in the latter. Here, seeing is believing: the effect of perception is a response to a stimulus occurring as an internal state – as mental action deep in the recesses of the brain<sup>126</sup>, but this is not only simply seeing and believing – it extends to a feeling of falling in or gliding over. Sensory experiences and, I would add, imagined sensory experiences, can be thought to be real states of the brain, and therefore create the sensation of motion. Texture of small light–dark contrasts or simultaneous complementary colours can set up a motion response of flickering or directional lines implying motion. When gestural painted movements occur at a specific scale, the viewer's empathy retraces these repetitive movements over and over again to construct a sense of implied movement. Monet quite intentionally used this kind of gesture, for example the vertical looping on the clouds, while in contrast he repeated the horizontal gesture of open ellipses for the water's surface. Perception is not a static state, it has inherent dynamic qualities that are always adapting and always in motion – spatio–temporal changes in retinal images are converted into motion<sup>127</sup>. A sensation of motion occurs when sitting for

hours in the presence of the *Nymphéas* – sensations that produce a feeling of floating or flight, or the sensation of falling. These sensations are as physical as the sensation of being touched by the vibrations of colour and light that emanate from the paintings into the room. There is a real sense of the sensations of touch and sight, a synaesthesia<sup>128</sup> in the act of giving over to the totality of the experience<sup>129</sup>. I am speaking here of sitting for a long time looking at the east wall in Room Two. I would suggest that it is an interaction between the curved wall surface, which partially fulfills the sensation of real space, and the profusion of layered marks with their out-of-focus or unfocused edges. With the latter, it seems to be the conflicted perceptual experience – the desire to focus on these marks and the inability to do so – that contributes to the illusion of three-dimensional depth. Standing by the edge of the pond in Giverny, with its often dark reflections, there is produced the same sense of vertigo or flight in the moment of contemplation.

Motion in static images such as paintings are achieved by activating, at least partially, mechanisms involved in the perception of true motion. Such a study should be available, but there does seem to be evidence in psycho-physical experiments on the conditions for static induction of a motion impression. However, such images as speed lines, which simulate blurring of rapidly moving objects along its direction of motion, induce a sense of motion. It has been difficult to find the cognitive underpinnings of perceived pictorial motion. But since we live in a time charged with motion, even Monet's painting of the steam train at the Gare de Lyon implies this. Oliver Braddick<sup>130</sup> gives the example of Turner's *Rain, Steam, and Speed* and Balla's stroboscopic sequence of images in *Swift's; Paths of Movement and Dynamic Sequence*. But each of these dynamic properties are characteristic of particular objects or particular events. Our perception recognizes the kinetic form and its dynamic pattern and, as Braddick writes, in recognizable biological objects. My attention was drawn to experiments showing the most minimal point-form of a walking-dancing human figure that was very recognizable in motion. Speaking about Monet, what movement could be more relevant than the motion of light. The motion of the sun during a day, already implied by the *Nymphéas* – the movement of light flashing as it reflects off surfaces and refracts in the lens of the water. These I am sure are just as firmly registered in our memory bank as a walking

figure. The little traces left by Monet's brush as corpuscular light-infused substances, and the various directions of brush marks simulate – for me – movement, streaking movements of light, highly active, highly charged, coming off the canvases until the viewer is surrounded by this sense of movement everywhere. This does not change whether the viewer is walking or sitting, and since the paintings are all the same height, there is a panoramic continuity even across the data gaps between them; that is where Daniel C. Dennett's<sup>131</sup> idea of *filling-in* is relevant: what is not seen is hidden and is filled in by us in memory. Gibson developed the concept of an optic flow-field, whose pattern gives depth information, and the three-dimensional lay-out forms objects. The orientation of surfaces in space through this optic flow-field structures motion. For example, in moving forward over a horizontal surface, like the pond, any vertical obstacle – in this case tree trunks – can generate a discontinuity in velocity or an increase of velocity, and the blurred edges of the grass on the water's edges on the right side of *Morning* imply a certain speed. Each point taken up by the observer, particularly in a converging perspectival formation, speeds the viewer along this field. Related to this, a sense of motion is also generated by shifting planes<sup>132</sup>.

#### *Line and Mass*

Elements of mass, even small elements, contribute to a large extent to fill in the information for a line drawing – namely lines that become thicker are not read as lines but read as mass, or a few lines intersecting can also create mass – these small amounts of mass apparently give a lot of supplementary information for form and volume, and are processed separately from lines in the visual system, which selects out elements of mass and line for separate processing<sup>133</sup>. Anthony Hayes and John Ross write that David Marr<sup>134</sup> suggested that the lines artists employ in their drawings or paintings are "*in correspondence with natural symbols computed by the brain out of the image during the normal course of its interpretation*" and they correspond to a description calculated by the visual system itself. I propose that the multitude of intersecting marks in the *Nymphéas* do just that, and contribute to a very particular kind of volumetric experience that is airy and consequently light – in this way discharging the colour energy into the rooms of the Orangerie, a combination of corpuscular and linear simultaneity<sup>135</sup>.

*Texture*

Monet's texture of painted marks has been described as brilliant, fragmented and disheveled, a textured combination of varnishes and paint worked into a thick combination of stiff greasy lumps that worked the paint thicker than cream, but thinner than Vaseline; that works the surface so that a knife can create furrows, spread across the surface uniformly, and still break into separate marks. Thick blobs could turn into wispy clouds, the marks at times were jittery, an episodic butting up against other grooved thick marks – and having a mixture of timidity and violence moving from violent outbursts to gentle airy responses in the same stroke. These are some of the observations made by James Elkin<sup>136</sup>, who with the help of a student attempted to analyze and reconstruct Monet's techniques by close observation of the *Nymphéas* painting installed at the Museum of Modern Art in New York. I have referred to texture mainly as a visual phenomenon of *gradient texture*, in which distance judgments are made by comparing the size of the textural marks – that which is further away is rendered smaller. This holds true in the *Nymphéas* – Monet decreases to a greater or lesser degree the water-lily pads, depicting them to achieve visual depth cues, increasing the depth of the visual field or holding it on a shallow plane (fig. 3.00). However, the texture created by the materiality of thick paint and its associations have not been fully discussed in cognitive perceptual terms. The closest discussion I have found that has any relevance points to the unconscious subjective actions in response to unconscious visual and multi-sensorial perceptions of the artist attempting to transliterate what is being confronted. Despite the heavily textured surfaces of Constable – noted by David Phillips<sup>137</sup>, or Monet, as noted by Zeki<sup>138</sup> – the marks are discussed only in terms of gradient value or light and dark value relating to pictorial spatial intention. While they agree in both cases that these are responses to *unconscious* intentions, they don't treat the materiality of the paint itself. I propose that Monet's marks and materiality are part of the empathetic mirroring<sup>139</sup> response Monet unconsciously assembles in order to respond to texture as sensation of *touch* and *spatial orientation* as a physical cutting – slashing into space. In the *Nymphéas*, the *shape of the texture is responsive to the beliefs* associated with the kind of energies generated by the shape depicted and mimicked – mirrored – by unconscious perceptions as the pressure,

weight and energy exerted in the movement of the brush orchestrates subjective and emotive, and therefore deep, psychological responses – *imitating what is perceived*. Perhaps the challenge presented to understanding such a complex texture in contemporary cognitive science is the complexity of its multi-sensorial character.

### 3.3.1.2 Analysis of pictorial space in the *Nymphéas*

Perhaps the larger context within which Monet functioned in his approach to pictorial space in the *Nymphéas* is most economically summarized for the entire impressionist project by Sidney and Ethel Blatt:

[...] 1) The ideology of reality as it was experienced; 2) No historical reference and concentration on autonomy of art; 3) Concentration of constituent parts, lines, form, colour. More than on the individual reality of persons or objects treating all experience as constituent visual sensations; 4) Defining inner form and abstract structures, 5) Attempts to bring the spectator more fully into picture space; 6) To extend the representation of three dimensions of space in a way that is consistent with emerging new conceptions of geometry and the fourfold spatio-temporal field that defines the observer as essential in any construction of reality<sup>140</sup>.

Monet in his *Nymphéas* offers us, through the lens of two linked centuries, his gift: a life-long deeply held commitment to seeing the world freshly, unsentimentally and – if it is a paradox, it is no contradiction – *emotionally*. This commitment amounts to an epistemology: that we can see the world most profoundly in the way that we can understand knowing – which in painting is through individual moments of light. As he explained it to Mrs. Perry, do not be distracted by objects – the important thing is not to define the world through these, but through colour, through the spectrum of light itself. Our attention is drawn not to Nature, but to Nature as the screen on which light, as colour, performs.

The manner in which the *Nymphéas* elaborates this has already been rehearsed in the foregoing text, and the quotation that heads this section places it succinctly. It is therefore both unnecessary and redundant to assemble a reductive summation of the subtlety Monet brings to the various strategic plays that engage the viewer of the *Nymphéas*. Unlike the installations at Pompeii and in the Bardi Chapel, Monet's installation in the Orangerie carries no overt subject-specific narrative – the *narrative* is simply *how we know* the organic



complexity of our shared human perceptual mechanisms *screened* – one might say, to borrow from the film vocabulary of the century's new and uniquely powerful medium – at the Orangerie, daily and in perpetuity. For us in this cinema-in-the-round, the volumetric effect of colour and light compensates for the lack of consistent depth cues, and the perceptual effect of space in Room One (fig. 3.54) is that the colour materiality of light emanates towards the centre of the room, while in Room Two (fig. 3.55) the colour and materiality surrounds the viewer and transports them out into its field.

The *physicalists* treated all psychological data as a transposition of matter in space<sup>141</sup>. While this is no longer a respectable association, the very fact that the perception of feelings creates phantom physical sensation should give us pause. Despite Monet's struggle to complete the *Nymphéas* as time closed in on him, there is a feeling of well-being, peace and transcendence transferred to us like a phantom feeling of Monet's own making. It may only be a pretty thought, but our growing recognition of the body's complexity permits us to speculate on how, indeed, we can know something as *merely material* as a painting. As Margaret Hagen<sup>142</sup> writes, "*All representational paintings succeed as representations because they carry perceptual information about the subjects they picture, but not all paintings carry the same feeling*". Susanne Langer, writing some forty years ago, articulated a position consistent with the period the inextricable connection between feeling and perception:

[...]I believe that feeling [...] is the intellectual excitement; the feeling of heightened sensibility and mental capacity which goes with acts of insight and intuitive judgment [...] what the created form expresses is the nature of feelings conceived, imaginatively realized, and rendered by a labor of formulation and abstractive vision [...] There is no basic vocabulary of lines and colours, or elementary tonal structure [...] with conventional emotive meaning, from which complex expressive forms [...] works of art, can be composed by rules of manipulation<sup>143</sup>.

But I wish to close this section with a passage from Antonio Damasio that speaks to our own contemporary position on this linkage:

[...] Emotions occur in one of two types of circumstances. The first type of circumstance takes place when the organism processes certain objects or situations with one of its sensory devices – for instance, when the organism takes in the sight of a familiar face or place. The second type of circumstance occurs when the mind of an organism conjures up from memory certain objects and situations and represents them as images in the thought process – for instance, remembering the face of a friend and the fact she has just died. [...] certain sorts of objects or events tend to be systemically linked more to a certain kind of emotion [...] than to others<sup>144</sup>.

### 3.3.2 Philosophical beliefs

#### 3.3.2.1 General context

European philosophy in the nineteenth century was in one way or another predicated on the events and outcome of the French Revolution. The impetus for 1789 was the fact that the growth of the modern state, already in process, depended upon the *synergy* of the various classes within the French body politic. The ambition of that revolution for a just and good society was outlined by Jean-Jacques Rousseau (1712-1778) in *The Social Contract* published in 1762. Rousseau made the fundamental observation that also asked the question, [ If ] "*Man is born free [why] is he is everywhere in chains*"<sup>145</sup>? In the summery of the social contract Rousseau wrote:

[...] Now men cannot create any force, but only combine and direct those that exist...this sum of forces can be produced only by the combination of many; but the strength and freedom of each man being the chief instrument of his preservation...it is to find a form of association which may defend and protect with the whole force of the community the person and property of every associate, and by means of which each, coalescing with all, may nevertheless obey only himself, and remain as free as before. Such is the fundamental problem of which the social contract furnishes the solution<sup>146</sup>.

This philosophical position, as Rousseau reveals, motivated the urgency for self-knowledge and was in direct contradiction to what was felt as the *arbitrary authority and judgment* exercised by the church, which represented itself as God's agent on earth<sup>147</sup>. While the revolution to some extent fulfilled its promise – the peasants now owned their land – the revolution failed politically to implement its objective to construct a society based on liberty, equality and fraternity. The resulting disillusionment rendered even more attractive Rousseau's brand of romanticism and his idea of natural man, with its direct equation

between man and nature. This eventually evolved into a new philosophical position<sup>148</sup>. In *The Origin of Inequality*, 1755, Rousseau launched a radical criticism of society:

[...] O man, of whatever country you are ... attend to my words; here is your history not as I have read it, not in books composed by your fellowmen, for they are liars, but in the book of nature which never lies. All that comes from her will be true, nor will there be anything false [...] How much are you [yourself] changed from what you once were<sup>149</sup>?

As we know, Napoleon played phoenix to the French Revolution, and in spite of his self-proclamation as Emperor, proceeded to export the revolution's aspirations as one of its self-made heroic examples. For a short time, at least, he brought stability to France and in his conquests spread the romantic idealism – if not the anticipated results – of Rousseau's aspirations for man. One significant consequence of the Napoleonic war was a shift of power that liberated Austria and Germany from their dynastic bondage<sup>150</sup>. The philosophical success of these ideas was based on the systematic refutation of the traditional philosophical arguments for God's existence, and as Richard Tarnas writes, it was imperative to show that causal reasoning was not appropriate in moving from the "*sensible to the supersensible*. *Only the realm of possible experience, of concrete particulars registered in sensation, offered any ground for valid philosophical conclusions*"<sup>151</sup>.

David Hume (1711-1776), contemporary with Rousseau, began the argument against the certainty that René Descartes<sup>152</sup> (1596-1650) had argued would be revealed to prove the existence of God from logically demonstrable self-evident intuitions. There was, of course, a paradox here within Descartes' empiricist approach to knowledge, one that also limited human knowledge to that which could be demonstrated and tested by concrete experience. Therefore Hume, a skeptic and himself a secular thinker, argued that Descartes' intuited evidence was philosophically unacceptable as a proof of God's Existence. What Hume proposed was that there are two kinds of reasoning. One is *demonstrative* and the other is *probable*. Therefore only demonstrative reasoning can establish the uniformity of nature, and perceptions alone were real to the mind with no real knowledge beyond them. This resulted in the difference between sensory impressions – which could become the basis of any form of knowledge – and ideas, which he attributed with being only faint copies of impressions<sup>153</sup>.

I suggest that Monet would have agreed with Hume that sensory impressions would be stronger than ideas.

George Berkeley (1685-1753), born twenty-five years earlier than Hume and Rousseau, had already argued that human experience is phenomenal and limited to appearances in the mind. A person, he believed, is able to apprehend immediate knowledge of themselves, their existence and nature, by the simple *reflex act of perception*, the recognition of self revealed in the perceptual act. This opened up the notion of self-knowledge – "*to be is to Perceive*", according to Berkeley<sup>154</sup>. Hume's *Concerning Human Understanding*, published in 1748 and revised in 1758 as *An Enquiry into Human Understanding*, speaks to this<sup>155</sup>. Hume's version of the rational nature of man, based on the *universal and necessary principle*, was, however, grounded on the habitual character of thought – a notion ultimately detrimental to the whole spirit of self-determination and of man's free will – and of course therefore to the ideals of the French Revolution<sup>156</sup>. Immanuel Kant (1724-1804), a near contemporary, had become aware of Hume's writings and famously remarked that Hume had "*woken him from his dogmatic slumber*"<sup>157</sup>. What woke up Kant was in particular Hume's reference to the idea of self, experience, memory and time as having an empirically illusive character of existence. Anthony Quinton paraphrases it as follows:

Whenever I look closely into myself all I can find is a more or less chaotic sequence of particular perceptions, impressions and ideas of sensation and reflection, feelings and thoughts. I know that I am not having certain experiences and I remember having had others. But I have no impression of an unchanging item to which all these things belong. Since it would have to be an unalterable, invariant content of my consciousness, it could not make itself felt<sup>158</sup>.

Hume's view concluded that man could know only the phenomenal<sup>159</sup>, and imagined the mind as a *tabula rasa*, or blank slate, on which the world was inscribed only by experience. This suggested that any metaphysical conclusion concerning the nature of the universe went beyond man's experience and was unfounded<sup>160</sup>. The Enlightenment ideals concerning *natural man* and the primacy of a *prima facie* Rights of Man seemed doomed.

Kant, in an attempt to justify metaphysics as a legitimate philosophical enquiry, let alone a moral compass, searched to define new foundations for the universality of scientific

judgments<sup>161</sup>. He achieved this by combining the rationalist view of Leibniz (1646-1716) – that knowledge is based on and justified purely by the intellect,<sup>162</sup> with the empirical view of Hume. Kant worked these ideas out in *The Critique of Pure Reason* published in 1781, and set out the principles underlying objective judgments about reality by synthesizing these two opposing views<sup>163</sup>. Philosophically, the notion that the mind and its object had a preordained correspondence was dead<sup>164</sup>.

While Kant agreed that the conditions for recognizing an object as *real* are set primarily by the individual, the idea of *beauty* and its *reality*, however, proved to be a special case. In the *Critique of Judgment*, he writes that the idea of beauty is arrived at through a claim on the agreement of *every one* just as if it were objective; it is through the pleasure of the individual echoed by the collective – the *sensus communis* – that the idea of the beautiful is experienced<sup>165</sup>. However, the effect this had on the idea of any judgment was that it made subjectivity as an aspect of judgment irrefutable. I would suggest here that this Kantian relationship between subjectivity, beauty and judgment underwrites the *Nymphéas* project, with its premise that beauty – the sublime beauty of nature – is to be shared as a gift to the French collectivity. While judgment was able to resolve intellectual doubt, moral reasoning or practical reasoning as Kant understood it was guided by the volition of *will*. Will was the mechanism by which one made choices, and choices were, as Rousseau claimed, about freedom of the individual.

Kant saw two ways in which will functioned. Moral laws<sup>166</sup>, unlike the laws of nature which science describes, do not tell us what is the case; they tell us rather what ought to be the case. Practical moral reasoning cannot in this sense address itself to the resolution of intellectual doubt, but they can be applied to the unresolvable conflicts arising out of will<sup>167</sup>. Kant makes a clear distinction between pure theoretical reason and practical reason and consequently between science and ethics<sup>168</sup>.

In Kant's *Prolegomena to any Future Metaphysics*, in the chapter on *Cosmological Ideas*, transcendent ideas such as soul cannot adequately be given reason because it remains given only to the senses and therefore cannot transcend it. Within these arguments, Kant suggests that all metaphysical distinctions cannot escape their oppositions – a thesis-antithesis relationship – that are always founded on human reason.

This paradox underlies Hume's division of the world into mind and nature. Hume stood in terror of the possibility of incomprehensibility of the world by the mind, and Kant – reading Hume – was truly shaken by this possibility as well. It is this that prompted him to establish objectivity of experience through the nature of a self that must exist in space and time, allowing for the fact that the phenomenal body always operates in space and time. And in order for an individual to have experiences, Kant wrote, there must be an enduring mental substance<sup>169</sup>.

Following on Kant's generation, Arthur Schopenhauer<sup>170</sup> (1788-1860) generally agreed with Kant – particularly on the notion that subjectivity is an important aspect of judgment. He writes in *The World of Will and Representation* "The world is my representation"<sup>171</sup>. Representation in English suggests to *re-present* something. Schopenhauer uses the word *Vor-stellung*, which translated means *imagining (vor) before* – to make something for myself from the beginning with what I already know. It is theatrical, not passive, but instead an active engagement<sup>172</sup>. Schopenhauer, in summarizing the new position of philosophy, believes that the failure of objective philosophizing in the past was due to a lack of both naming and recognizing that everything depends on the actual state of consciousness, whose condition is tied to *ideality*. Despite empirical reality, consciousness is always returned to the state of being a phenomenon. For example, in a dream – he writes – the state of the world [as one perceives it is perfectly objective, perceptible and palpable, shared with the waking world<sup>173</sup>. For Schopenhauer, the thinking subject establishes the standard for any objectivity "my idea", he wrote, "is real to the extent that it conforms to my conception of what any real thing must be"<sup>174</sup>. Yet in the world of representation two poles exist. Schopenhauer, in the manner of an allegorical drama – the *Prabodha Chandro Daya*, by Krisna Misra – constructs a philosophical argument in which philosophical concepts of Subject and Matter become personified<sup>175</sup>:

The Knowing Subject speaks: besides me there is nothing [...] and Matter, crude matter without form, responds – I am, and besides me there is nothing, for the world is my fleeting form. You are a mere result of a part of this form, and quite accidental. The Subject answers back; what silly conceit! [...] Whoever thinks me away, and then believes he can still think you, is involved in gross delusion; your existence outside my representation is a direct contradiction [...] you are simply means you are represented by me. My representation is the locality of your existence; I am therefore its first condition<sup>176</sup>.

The dialogue continues to establish the relationship between Subject and Matter as inseparably connected, as necessary parts of the whole, each existing through the other. The *subject*, for the *Nymphéas* – the pond at Giverny, – is inseparable as a reality from the *material* of the painting in which Monet re-presents it to the viewer. Only misunderstanding this, Schopenhauer believes, can set the two apart as oppositions. And he concludes: "*This whole, including both, is the world as representation, or the phenomenon. After this is eliminated only the pure metaphysical, the thing-in-itself, which is the Will, exists*"<sup>177</sup>.

The Will – which for Schopenhauer truly exists with a capital W, which was not the case for Kant – is the *Willing* that some change must occur, because each individual always "*exists in a state of perfect discontent*"<sup>178</sup> in which as soon as one's desire has been met, another takes its place. It is in this way that Schopenhauer sees will as the unified cosmic principle that is everything, underlying all appearances, whose essential nature is unconscious, mindless, with an absence of all aims and all limits or boundaries. Will is understood as a metaphysics of *Life*, writes Paul Lauxterman, and biology is as important for Schopenhauer as history was for Hegel<sup>179</sup>.

I propose that, as in the case of Monet, Schopenhauer assumes the position of an objective observer of human nature, in which the body is the will itself, objectively perceived as spatial phenomena<sup>180</sup>. The absence of spatial reality is devastating for him, as it is death itself. Schopenhauer carries this idea over into aesthetic judgments. Sculpture, the art of the ancients – he insists – should be voluptuous or life affirming, equating the occupation of real space with *affirming the will to live*. Painting, on the other hand – the art of Christian times – denies real space and only affirms the illusion that becomes the *denial of life*<sup>181</sup>. It is interesting in this context to consider Monet's portrait of Camille on her death-bed. But in

this idea of death rests a paradox. Schopenhauer writes in *Parerga and Paralipomena* published in 1851: "*The entire centre of the world is in every living being, and therefore its own existence is to it all in all. On this rests also egoism. To imagine that death annihilates it is absolutely absurd, as all existence proceeds from it alone*"<sup>182</sup>.

Schopenhauer's philosophy underlined the subjective nature of knowing and being, and whether he writes about metaphysics, morality or ethics there is a passion quite different from Kant. If Kant's Subject can only recognize beauty from the collective agreement, Schopenhauer's *Knowing Subject* marks the potential for beauty through personal pleasure which is assessed through the feeling of *that internal sense or state of pleasure* for the producer, transferred to the viewer. Schopenhauer writes: "*For I must feel the pleasure immediately in the representation, the first fact of consciousness, of the object, and I cannot be talked into it by any [other] grounds of proof*"<sup>183</sup>.

Grounds of proof about self began to shift with Schopenhauer when he wrote that the dream reflects the waking world [as one perceives it] as it is perfectly objective, perceptible and palpable. The French philosopher Henri-Louis Bergson (1859-1941) extended Schopenhauer's proposition that the self is a biological entity whose complex consciousness is a matter of psychological, physiological and metaphysical aspects. In March of 1901 he lectured on dreams and spoke of time and space in terms that resonate with Monet's passion, even an obsession, with becoming master of space in trying so hard to capture that perceived moment of time. Bergson, writing in *Mind and Energy*, Chapter V, on the importance of time, makes sense when he points out that in space there are subjectively no unperceived movements and consciousness with unextended sensations:

[...] My presence is the consciousness that I have of my body. Having extension in space, my body experiences sensations and at the same time executes movements – sensations and movements being localized at determined points of this extended body – there can only be at any given moment a single system of movement and sensation<sup>184</sup>. Perception is a master of space in the exact measure in which action is a master of time<sup>185</sup>.

Bergson<sup>186</sup> sees life as processes of continued reconstruction in the world of experience, in which memory influences future action. Monet, I suggest, painting the *Nymphéas* in his studio, employed this concept of reconstruction through memory. In the painting *Clear*



*Morning with Willows* in Room Two, Monet's editing and reconstruction of the original painting (*Willows*) points to his intention that the *Nymphéas* would be a reconstruction – through memory – of an *emotive* experience, rather than of a literal scene.

Bergson sees human actions and consciousness in evolutionary terms as seen through *time*, in which everything is subject to change both within the objects themselves, an inner change, and exterior to them – producing an outer change<sup>187</sup>. This is as true, he wrote, for perception as for things in the world. Change happens in objects just as it happens in us, because man is as much nature as nature itself. Monet, I propose, recorded not so much the nature in front of him, but really rather his changing perceptions of what was in front of him – which just happened to be nature – and which he lay down one colour stroke at a time with as much speed as he could muster. All fundamental processes, Bergson suggests, happen in *time* or duration, which is distinct from space and can never adequately be represented in spatial terms, which is always to distort reality – a concept Monet records with marks of paint. An instance of pure duration, the moment Monet perceives and brings his perception to consciousness, is also distinct from mere motion in a fixed space; it can only be found as part of the inner personal experience. Moments of duration are also never singular events, but are events of interpenetration that are necessary for any change to occur when we have the experience of sensations, feelings and ideas Bergson postulates.

With the French critic and philosopher Paul Valéry, we come closer to Monet himself. It is known that on several occasions he visited Monet in Giverny<sup>188</sup>. Valéry was aware of the Impressionists' attempt to apprehend *reality* and was very supportive of the *original manner* in which they attempted to represent it. Valéry was interested in getting beyond concepts that embodied and fixed the picturing of the world, and consequently limiting the kind of experience that were deemed to be possible. This is a case where it can be said that Monet's desire for recording the world in his manner must have influenced the philosopher as Valéry concluded that the *real* should be apprehended in the most direct and immediate way possible because he believed that the perceptual moment of grasping selectively experienced reality cannot be exhausted<sup>189</sup>. This is what Monet did. And Valéry, from his writing on Berthe Morisot in 1926, would add:

[...] However much their (artists) various visions differ, they all have something in common, which is to see nothing else than what can purely be seen. They attend not to the object, but to its significance; the things before them are instantaneously transformed into sign<sup>190</sup>.

### 3.3.2.2 Analysis of pictorial space in the *Nymphéas*

[...] While you seek the world-in-itself [Schopenhauer's the thing in itself] in philosophy, [Monet said] with his warm smile, I simply turn my energies to the greatest number of phenomena possible, since these are in strict correlation with unknown realities. When one is on the plane of harmonious phenomena, one cannot be far from reality, or at least from that which we can know of reality [...] and let my brush bear witness to it<sup>191</sup>.

Monet was on a mission, to give pictorial presence to how *reality* as understood in the late nineteenth century and early twentieth century could be understood. The idea of breaking with conventions in the atmosphere of progress at the time was *second nature*, as some things were understood to be demonstrative or based on empirical observations, while other things were probable – based on a set of speculatively generated abstract assumptions. Monet in his daily life insisted on order and harmony by exerting as much control over his own environment as possible<sup>192</sup>. Any distraction or invitation to socialize was carefully measured, to the extent that when Monet was approached by members of the Institut de France to become himself a member – this was quite an honour – he refused to join, adamantly stating that he was an independent. "I thank you gentlemen", he is claimed to have told the representatives "but I have been, I am and I always shall be an independent"<sup>193</sup>. Monet, as the self-determined man, reflects the romantic aspirations of both Rousseau and Schopenhauer, and, since leaving Paris, his life and its ambition was like a page taken from André Theuriet's reflections about the conditions of modern man published in *La Vie Rustique*, Paris 1888. Theuriet wrote "it is in the cultivation of the earth, in country life lived in the open air, that the French Bourgeoisie should seek rejuvenation and salvation, the renewal from within"<sup>194</sup>.

Monet wanted to create an environment for the people of France in the two oval rooms of the Orangerie that would act as a sanctuary for this kind of renewal that he himself found in the countryside<sup>195</sup>. The oval organic cellular shape of the designs of the two rooms reflects

the importance of the idea of the self as a biological entity, one not separate but a part of nature and of natural process and phenomena. This notion became important to Berkeley, Hume, and Kant – and was defined more specifically by Schopenhauer and Bergson. Evidence of the relationship of Monet's self identification with nature and the designs of the rooms of the Orangerie can be discerned from his last *Self-Portrait* in 1917, now in the Musée du Louvre. Monet painted that self-portrait in this very same shape as two joining ovals (fig. 3.56) making up the head and beard.

This organic configuration was clearly a very important part of the design for the Orangerie, one that Monet insisted on and finally integrated by 1920. Two rooms, two different narratives joining to demonstrate and make sense of that struggle from within which, as Hume would have said, seems a chaotic sequence of particular perceptions, impressions, ideas of sensations, and reflections, feelings, and thoughts. Hume simplified this whole confusion by claiming that the only thing man could know was the phenomenal. This was Monet's *modus operandi*. The Mind as a *tabula rasa* became Monet's blank white grounded canvases, a field in which subjectivity as an aspect of judgment both of what he perceptually, empirically observed and what he perceptually emotively experienced, was accepted and recorded. However, this type of judgment was, as Kant had already pointed out, guided by volition, by *Will*. One could say that Monet's personal history is the history to fulfill *his Will*. Over and over again Monet engages this will with a very deliberate single-mindedness in order to accomplish his goals, to fulfill his expectations, his desires. Monet's desires are two-fold. One was the desire to fulfill practical scientific reason. For instance, colour and light have a direct measurable correspondence with the colour spectrum and the spectral range of pigmented paint, in accordance with the natural laws of colour and light.

If I have regained my sense of colour [...] it is because I have adapted my working methods to my eyesight [...] on the one hand trusting solely to the labels on my tubes of paint and on the other, to force of habit, to the way in which I laid out my materials on my palette. I soon grew used to it and I never made a mistake<sup>196</sup>.

And then there was the other desire, that which was needed to fulfill personal inclinations associated with ethics – the ambitions and ideology behind the desire to capture *reality* at all costs. This idea was more abstract and complex, and appealed to Monet's sense

of duty. As a painter, it was his ethical purpose to reveal reality and to share that revelation with others. While, as a professional artist, he engaged in commercial sales of his work, his gift of the *Nymphéas* to the people of France underlined his sense of social duty.

It is in this spirit that I would argue that Kant's doctrine of two reasons – or two ways in which Will functioned – resonate with the Orangerie Installation. Two important early influences on Monet already hold the seeds contained in the two forms of the will that Kant identifies and Schopenhauer and Bergson elaborate on. Eugène Boudin's<sup>197</sup> (1824-1898) emphasis on empirical observation can be compared to Kant's laws of nature, those that inform Monet's practical reasoning in his observations, answering to what *is* the case – in Monet's methodical habitual recording of colour relationships. Monet is forced to find a way of inventing how to represent what he is subjectively experiencing as he observes the process of altering appearances. Monet perhaps obliquely understood that what he was looking at is no longer part of pure empirical objective observation, but rather engages memory to recall not only a purely visual memory, but the memory of all the sensory input in an attempt to recall the feeling of that memory as he works during his severe mood swings<sup>198</sup>. It became well known also that Monet spent days and weeks retouching his pictures from memory after the trip to Venice<sup>199</sup>.

This desire for total recall was something that was not particular only to Monet. While he was working out the structural logic for the arrangement of the two rooms, Clemenceau visited his studio on his return from Egypt. Surrounded by the paintings and aware of the plan, Clemenceau found the idea of arriving at the installation through a door very disturbing. His ambitions in this instance were ideological. He said that one ought to arrive by elevator in the middle of it all in order to see the installation as a whole complete independent world. Monet himself was also already making plans to create a total environment. Namely, he tried to interest the Minister of Commerce and Industry in having a carpet manufactured that he had designed for the installation<sup>200</sup>. The ambitions of Monet's installation went conceptually well beyond the photographic panoramas of his time in that he attempted to create what might be described today as a controlled total sensory environment that was both kinaesthetic and visual.

Room One positions the viewer so as to be looking from the centre of the pond towards the shore, something which is only insinuated in *Morning* and the *Setting Sun*, affirming in a concrete manner the position of the viewer. Michel Georges-Michel, visiting Monet, quotes him as saying: "I am going to put them [the *Nymphéas* paintings] all around, as though one were in the middle of the pond"<sup>201</sup>. And Thiébauld-Sisson wrote from a later visit to Monet's studio in February 1918 on observing the arrangement of the canvases that contained the weeping willows, that Monet had conceived a brilliant solution:

[...] Utilizing a compositional process whose simplicity was one of the happiest inspirations, he had depicted the water-lily pond from the perspective of the path that encircles it, and each of the vantage points he had selected was enclosed in the framework of one of the canvases<sup>202</sup>.

These two visits affirm Monet's original conception whereby the representations of the *Nymphéas* were relatively traditional in its establishment of the viewer's position. But with his subsequent editing and arranging – and re-arranging – the paintings for Room two, I propose that Monet saw a second possibility, confirming Valéry's interest in getting beyond concepts that fixed the picturing of the world. As a consequence, I believe, the viewer in *Room Two* is positioned on an *inverted shore* gazing out over the pond at a different point for each painting in the room.

Each of these positions determines for the viewer, as I will demonstrate, a different state of consciousness and a different state of Will. In Room One (fig. 3.15), the viewer is empirically conscious of being at the centre of the pond in a state of self reflection that produces through perception the self, and therefore space, as Schopenhauer believed – simplifying the two notions of Kant's Will to the singular idea of Will as the personification of the body, and therefore space. Room Two (fig. 3.16), on the other hand, gives the viewer an indeterminate position, because the viewer can only imagine spatially standing on the encircling shore of the pond, since here it is inverted to the inside. There is no direct relationship between the position of viewer and the pond, as in Room One, where the middle of the pond is equivalent to the middle of the room. Here in Room Two the shore as a totality has to be continually imagined through memory alone. Memory, let us remember has only the dimension of time, according to Bergson. Each room, it can be argued, is experienced

therefore from a different state of consciousness – Room One as space – *will to space*, and Room Two as time – *Will to memory*.

*Room One: Space*

The form that colour and light takes on the canvas by the strokes of paint – what Schopenhauer understood as eternal material – can be said to respond to a physical complex that is beyond Monet's rational control. In other words, the 'eternal material' has metaphysical potential which, however, Kant claims, are still also only given to the senses and cannot transcend them. It is in the authenticity of Monet's representation<sup>203</sup> – not through colour phenomena as such, but through the layers and configuration of coloured marks or strokes that he first embodies *subjectively* and the idea of space. Schopenhauer's *body* is the *Will* itself, objectively perceived as spatial phenomena. The absence of space was for Monet, as for Schopenhauer, the devastation in death<sup>204</sup>. While the principle subject of this analysis is the installation of the Orangerie, much can be learned about Monet's relationship to pictorial space as body by briefly understanding its presence in the last portrait he painted of his wife, *Camille Monet on her Deathbed* (fig. 3.57), in 1879. It illustrates well Monet's preoccupation with the will-to-body – life, and therefore to space – that is so much part of the Orangerie installation. Instead of his portrait of the dead Camille represented as a pictorially spaceless entity,<sup>205</sup> Monet's moral will to body, space and life becomes personified in the portrait of the dead Camille. Monet himself wrote in a letter to George de Bellio in 1879 on her death:

[...] I caught myself with my eyes focused on her tragic temples, in the act of automatically searching for the succession, the arrangement of colour gradations that death had imposed on her motionless face. Blue, yellow, grey tones, who knows what else? That was the point I had reached. Nothing was more natural than the urge to record one last image of a person departing this life. But even before I had the idea of recording those features to which I was so profoundly attached, my organism was already reacting to colour sensations, and in spite of myself I was involved by my reflexes in an unconscious process in which I was resuming the course of my daily life<sup>206</sup>.

The idea of habit that Hume was chastised for was not yet given a psychological dimension<sup>207</sup>. Monet holds on to the pragmatic *reality* of the world through observation of the laws of nature to make the world of irreality, her death, real to himself. Was it not Hume who

said that self-knowledge is facilitated by the simple reflex act of perception, while metaphysical conclusions, as in this case concerning death, are beyond man's experience? In the letter, Monet is as conscious of his capacity for unconscious pragmatic actions as he is conscious of the moral necessity that despite Camille's dissolution his need and obligation to himself is to continue his life – that to survive is paramount. While for Hume, and also for Monet, sensory impressions represented *real knowledge* – to be is to perceive – Monet's reaction was to grasp at his own will to live past this tragedy. This will is Schopenhauer's will – life equated to the body that occupies space. How is this encoded in the portrait? Rather than representing Camille's death through an absence of pictorial space – a pictorial flatness that might have been accomplished through a vocabulary available to an Impressionist, he asserts his own *will to life* by wrapping the figure in open loose layers of brush strokes. While Virginia Spate interprets this open layering of strokes as a recording of dissolution of form<sup>208</sup>, I argue that it is *giving body, making space to breath*, a will to live – now not Camille's all too final death, but Monet's will to live beyond this loss.

As Clement Greenberg<sup>209</sup>, in his revision of Monet, recognized, the broad, daubed scribbles of the late *Water Lilies* assert that the surface of a painting must breath. But this breath is to be wrought of the texture and body of canvas and paint, not of disembodied colour, whose pigment is solicited from the surface. For Monet, the material that holds the colour takes the character and consistency of the thickness or vaporous liquidity suspended in the forms of the marks – what kind of marks depends on the intentions. Monet's inventory of marks includes verticals, horizontals, diagonals or strokes and open-ended circular marks.

However, in both rooms Monet develops a particularly dominant vocabulary of marks. In Room One the viewer, located at the centre of the pond, can seemingly touch the surface and reach through the dominant vertical marks to experience the material presence of the vegetation while at the same time reaching into the water's depth. If we compare the rendering of Room One (fig. 3.58) with Room Two (fig. 3.59), the grasses, lilies, reflected trees and water that are being represented are more volumetrically articulated with a relatively greater degree of realism. There is less of a suppression of value, and more light and shade or chiaroscuro than the representations in Room Two. The illusion of overlapping

realities of sky, undergrowth and the pond's surface becomes visually forced apart, however, by the loosely painted and individually articulated, very physically present, marks through both their drawing and their texture. It is understandable why Monet objected to varnishing his paintings. I believe he feared that this presence of material and layering would be sealed in and restrict the perceptual prying apart of the surface. Monet's contribution to the idea of space here is not the projected illusion of renaissance space, but rather the loose and open, incomplete marks of many layers that give the surface a body, a breathing space for the self that it had never had before. It is the act of self-determination, to make present – to be present.

The body of the surfaces in all the paintings in the Orangerie coexist and are to a larger or lesser degree interdependent with the illusion of the sky's projected and reflected space. However, here the material physical presence perceptually responds not only to the pure opticality of perception, but also is intended – as I suggested – to transmit a kinaesthetic experience of pictorial space, the tactility of the physically present body, its touch. Monet's crusty and gesturally dense surfaces transmit the body's will to occupy space, they offer an acknowledgement of the individual's subjective right to be identified, to take up visible space. This declaration of self determination, of independence and interdependence, of essential equality – what is this if not the Rights of Man – in other words Rousseau's Social Contract. In his own way, Monet in these paintings of the water landscapes also echoes the fundamental existential human condition that Schopenhauer speaks of: space as the necessity for life existing on a thin crusty surface on a sphere in boundless space.

Monet seldom used more than cursory studies for his paintings. He made loose tentative sketches for the large decorations at the Orangerie<sup>210</sup>. R.R. Bernier<sup>211</sup>, writing about the language of Monet's *painted sketches* speaks of the brushstrokes as both subject matter and material that exploits the tension between representation and material by retaining the quality of a *brush-strokeness* when conveying a figure or landscape. I agree with him that these legible brushstrokes do not distract from our interest in the subject but is, quite the contrary, its very condition. The slow and unconstrained activity of reading the representation under these conditions, he observes, only means that the viewer must



reconstruct the subject for himself. For me this means that Monet's marks, his will to space, is calculated to create for us in the presence of the *Nymphéas* a condition whereby we can recognize our own reality as a sentient being – for us to perceive our own being, the application to self-consciousness of Berkeley's *to be is to perceive*. This is a paradigm shift from the Cartesian tradition. The nineteenth century French critic Frederick Chevalier clearly had some understanding of this about Monet's work when he wrote in 1877:

Monet's painterly procedures are a willed requisite incoherence, a deliberate act of visualizing our imagination in control of determining the material of our senses, giving it a form while remaining free from fixing it into any one combination, implying the actual general understanding of the world at that time<sup>212</sup>.

#### *Room Two: Time*

The *enduring substance* after Camille's death is for Monet, however, the pure metaphysical thing-in-itself – the will given substance in the sequence and order of colour and light relationships as memory in time. Monet said: "*I do not separate drawing from colour. That's my way of seeing, it's not a theory.*"<sup>213</sup> Therefore, he not only sees colour, but immediately identifies it with a movement in time – which after all is what the drawn line represents – forming a shape which can be a line, a stroke or strokes constructing a larger plane. From a more practical but for a painter very real perspective, Monet's concern with the chemical reactions and evolution of colours over the course of time is another dimension to his relationship to colour, something he admitted that he thought about constantly while he was painting<sup>214</sup>.

Time was exactly what displaced the primacy of Schopenhauer's space with Bergson's idea of duration – the extended moment in which more than one event occurs and becomes its own measure of time through memory. While Monet defends his painted open-ended marks as an expression of fleeting moments, colour for him exists as a duration of enduring reality as memory. "*the air and light which vary continually...for me the surrounding atmosphere [created by colour] gives objects their real value*"<sup>215</sup>.

This is especially true for Room Two (fig. 3.21, 3.22, 3.23, 3.24), in which there is also an uncanny chromatic resemblance between air and light, in that both are rendered with the

strong presence of the intangibility and infinitude of blues. One of the reasons that Monet insisted on a very dry looking colour and paint – with an effect akin to opening a jar of pigment and experiencing the intense reflection that colour carries when not absorbing light – is that the pigment should not look as though it was applied or fixed to the surface, but rather should *come towards the viewer* from the surface as though *actively* traveling in time. This dimension of the active tense must, however, be seen as consistent with the subjective quality of colour that impels memory and feelings that are themselves formed in time.

For those with whom Monet was in contact, knowledge of the world, and of the individual who was part of it, was informed *not* by Christian creationism, but by Darwin's theory of life and its forms as evolving over time, evolving in processes that are not fixed but are evidence of a slow unfolding. In just this manner, Monet's paintings also were not dependent on their own literal internal coherence or unity of form but upon the combinations and correspondences that were possible – as Bernier pointed out – between paint marks, broad sweeps of colour and the ambiguous configurations in nature.

If Room One (fig. 3.15) can be characterized as having a greater verticality than Room Two (fig. 3.16), this sense – bordering on the sensation of vertigo – is experienced most markedly in *Green Reflections* (fig. 3.18). With its lighter edges and consistently vertical marks and darker centre, the viewer is corralled deeper and deeper into the unfathomable depth of its center, which seems to recede further and further away as the viewer moves towards it. In the second room, on the wall adjoining the first room, the vertical marks continue to cover the surface of *Reflections of Trees* (fig. 3.21) in the slate blue monochrome variations of the dusty appearance reminiscent of the fading light towards darkness. Arsène Alexandre<sup>216</sup>, describing Monet's conception for the installation, remarks on the very low placement of it, with the result that the paintings carried a sense of upward movement. In a fascinating contrapuntal movement to this, the viewer, placed as we have seen in the middle of the water-lily pool, would seem almost literally to be poised to plunge into a pool that now took on the passion and colour of a dream – Monet's multiple dream<sup>217</sup>. In sensing one's way into the *Nymphéas*, it is useful here to note that Monet told the Duc De Trévisé that he even painted during the night, for he dreamed of his paintings – something which Alexandre

confirmed – saying that Monet was so absorbed in his project that he was unable to stop. Monet himself mentioned that the most intense periods of his work were at night in his dreams, where he continued to spread colours on the canvas, descending lower, ever lower. Alexandre believed that no painter had ever abandoned themselves to his dreams with such freedom.

In Room Two (fig. 3.16), to a much greater extent than in Room One, this sense of unreality is induced not only through the positioning of the viewer, which is uncertain, but through a number of other means. The willows that mark the shore seem solid and very tactile, and their verticality, crossing the total height of the canvas, is what marks the vertical plane by which the viewer visually enters each painting. But each wall offers the viewer a different position in the room, and moreover – from this episodically experienced shore overlooking the pond – the water's surface and its vegetation appear to hover beyond the viewer's reach. To move from Room One to Room Two is to move between thesis and antithesis, between the finite and infinite<sup>218</sup>. All four paintings of this room are rendered with a suppressed scale of values, as Greenberg<sup>219</sup> has suggested, and the suppression of value is really an emphasis on value. Through disassociating it from chiaroscuro, colour varies in value but not in hue or chiaroscuro or intensity. If in Room One the prying off the surface is physical and layered, in this room the marks of paint are much more diffused, generally made with circular round motions that have less of a clear beginning or end. They do not seem to be subject to gravity, but spiral towards the viewer (progress ideologized), barely visible to the eye. The dry pigmented paint appears to come off the surface like a hallucinatory fog that engulfs the viewer. The very dry looking painted surface – at the same time opaque and translucent and rather vaporous, not transparent like a glaze – is, if one could imagine, like pigment *projecting* towards the viewer. With this effect, Monet achieves an instance of pure duration and that sense of atmosphere that engulfs the object distinct from mere motion in space. Clemenceau remarked on the struggle Monet had with the painting of clouds – that they seemed to the artist too solid at first, but that after reworking they became weightless vapors of whimsical wisps unraveled little by little by the wind.<sup>220</sup> There is no question that the movement of the clouds – in the rosy pink of dawn primarily of

*The Two Willows* (fig. 3.22), the largest and most panoramic painting, as well as in *Morning with Willows* (fig. 3.23) and *Clear Morning* (fig. 3.24), where it is merely reflected – aids in inducing this sense of atmosphere.

The effect of the physical presence of colour moving out towards the viewer is an active engagement of a fundamental process of the subjective side of perception in time – the objective reality of matter fusing with the multitudinous and successive vibrations into which this perception can be internally broken up. Memory here is the point between consciousness and matter. What is produced here is time, as the material becomes independent of the surface. Monet described it this way: "*Colour any colour, lasts a second, sometimes three or four minutes at the most*"<sup>221</sup> [...] "*To me the motif is not the primary event. The landscape does not exist in its own right, since its appearance changes at every moment; but its surrounding brings it to life*"<sup>222</sup>.

This room is the memory of Monet's experience of the landscape, located in space but particularly here in memory, or time. In this room, there is very little articulation of organized projected pictorial space investing the viewer's perception. Monet offers for the viewer the experience of time and duration whose vehicle is an atmospheric ambience that will in turn become part of the viewer's dream memory. The viewer is in the presence of, and subject to, the fundamental process of time and duration. Paul Valéry's thoughts resonate with this charge in that the perceptual sensations of grasping selective experienced reality cannot be exhausted conceptually, but linger in memory without words.

If the room is about intangibility, it is also conceived as the subjective experience of the inner state of a particular dream – the dream of liberation. To this extent it embodies an ideology, and it might be remarked here that all ideologies are dreams existing not in space but in time; any attempt to install an ideological conception within a spatial framework is bound to collapse. This is why Monet's *Nymphéas* is so carefully planned to separate Space from Time. In the second room, the dream of liberation stands alone, apart from politics, as a time-space to liberate the troubled mind: liberty, equality, fraternity – if not in the corridors of power, then for everyone, a gift to the people.

The mind/body split inherited from René Descartes (1596-1650) shifts in the nineteenth century to the idea of the mind not directed by the will of God, but by the will – the moral and social will, in possession of itself, as understood by Kant. And as for the body, it takes possession of itself as well – to be counted as having a *voice*, as being – *in association with the mind* – accountable. Indeed, the body now demands accountability *from* the mind as the dream of a just and good society – *liberty, equality, fraternity* – requires an embrace of the material body's needs. Monet acts out, I propose, this contract of the Will in the two rooms through a shift in the mind/body complex between *social contract* (Room One, in which the world positions me – and I, the viewer, am within its centre) and *moral imperative* (Room Two, in which I am decentred and I have an obligation to *locate* a centre through a moral self). The body as constructed in Room One represents the declaration of the self, the insistence on the self being counted, while represented in Room Two is the moral imperative of the self to be accountable, through itself to society. Dreaming and the Unconscious is the field in which that relationship is worked out, and Monet clearly dreamed – literally – about how these paintings should be an acknowledgement of an interdependence between mind and body, between self and the social complex.

In the Orangerie organization of the *Nymphéas* as a separation into two rooms, Monet would appear to present Descartes' fundamental division of body (Room One) from mind (Room Two). The appearance is deceiving. If Descartes, himself an avid gardener, saw flowers as each a distinct unit separable from a totality, Monet the gardener sees only an integrated whole, where apprehension (the touch of the body) and observation (the picturing of the mind) construct – or reconstruct – nature in its entirety, each room flowing into the other, each inseparable from the other. For Monet *these rooms are the totality of a single day*, a twenty four hour cycle, a conceivable whole – the movement of time, evening to morning and back again. One thinks of Joyce. From this large encompassing sense of the whole, the gaze from inside the interiority *of the body*, "*the glowing light that emanates from the paintings*"<sup>223</sup> fans out into the world and defines it for us.

The installation at the Orangerie was, after all, a gift to France. This gift must be seen, for Monet, as signifying a moral direction: the *Nymphéas* is meant to provide a moral

compass for the nation. The authenticity of the experience lies in this intention: a philosophical insistence on self-determination, subjectivity and the individual's accountability within Rousseau's social contract: *what ought to be the case?* But if this is Monet's intention, it is equally important to realize that it was one that he was reflecting back to the people of France, among whom there was a growing sense of the individual's accountability to society. The question was how to represent this abstract concept, and this was a problem not for Monet alone, but one embedded in the project of Modernity. What is specific to viewers of the *Nymphéas* is the demand to rehearse for themselves Monet's reflex to observe, to analyze and categorize every optical instance and locate oneself by necessity in space and time.

### 3.3.3 Spiritual Beliefs:

#### 3.3.3.1 General context

The Dijon academy in 1749 set a question for a prize dissertation: *Has the advance of the sciences and the arts helped to destroy or purify moral standards?*

The French philosopher, Jean Jacques Rousseau, submitted his answer by stating:

[...] the sciences and the arts have always been harmful to morality because they have always decomposed and destroyed the natural virtue of the human heart, and also the virtues of the good citizens which spring from it<sup>224</sup>.

A second question followed: [What are] *the origins and reasons of inequality among men?*

Rousseau also answered this question:

[...] The natural state of man is the state in which no man has need of any other, neither for good or for bad purposes, neither friendship nor enmity, because sitting peacefully beneath an oak and drinking water from a spring, he is outwardly free of all tools and inwardly free of all reflection<sup>225</sup>.

It is noteworthy that Monet's last readings were on friendship.

These two questions and their answers underlie the new definition of Man's identity that theological reflections in both the eighteenth and nineteenth centuries had to confront. Lester G. Crocker has summed up the relationship between Rousseau's definition of the

Natural Man and man as a socially conscious member when he writes: "*Man as he is, is fighting primarily for his own interest. But beyond this he assumes a rational unity amongst all men, consisting of what their reason would desire if all individual passions and desires could be stilled. This is the general will*"<sup>226</sup>.

The traditional Christian model of abandoning earthly reality and aspiring to give over one's whole being – body, heart and soul – to God was in stark contrast with Rousseau's plea for man to engage fully in the social contract and not to abandon earthly or social matters, but instead to take responsibility for governing oneself in every way<sup>227</sup>. Rousseau openly and defiantly took the position that a religious commitment was most honestly carried on outside the institutional authority of the Church. The French playwright and intellectual, Francois-Marie Arouet de Voltaire (1694-1778) also believed in *natural religion* and campaigned vigorously for freedom from any form of institutionalized religion, condemning the social effects of *revealed* religion as causing insidious harm to the practitioner. These ideas resonate with Monet's burial, which although it took place in the family plot behind the apse of the village church, Monet wished it to be only a secular ceremony<sup>228</sup>, evidence that he did not believe in the institution of the Church.

The German philosopher Gotthold Ephraim Lessing (1729-1781) attempted to define human nature. Lessing suggested that it was from the sanctuary of *one's own secure internal wholeness* named by him *an internal place*, that the individual was able to step out into the world<sup>229</sup>. I feel that the *Nymphéas* installation came to represent for Monet the ultimate sanctuary that afforded him this *secure internal wholeness*. This sanctuary was his gift to the French people. Lessing went far beyond Rousseau in that he unequivocally challenged his own power of reason and observation by both analyzing and comparing other religious dogma, concluding that all religions should be given equal respect and consideration. He wrote in his theological writings: "*I myself submit to this investigation like an honest man! Look everywhere with your own eyes! Distort nothing! Embellish nothing! Let your conclusions flow as they will! Do not impede [and] do not attempt to guide their course*"<sup>230</sup>! Monet's insistence on observing the world first hand – unembellished – recording what he *himself* saw, and unmediated by received conventions – was a position taken more than ever

in the *Nymphéas*. It was said of Monet (by Fairfield Porter in a critical exchange with Clement Greenberg), that Monet wasn't interested in the conventions of chiaroscuro because he wanted the paintings to be his own *simply for the sake of being his own*<sup>231</sup>. Lessing believed that man's only duty was to practice natural religion, from which – as a collective joint assessment of the nature of society – there would be evoked certain moral parameters that could be judged of value<sup>232</sup>. This social spirit and collective judgment replaced the doctrinal truth of an institution with a truth arrived at through public debate. What this implied was that Truth was representative of collective ethical and pragmatic choices in man's history. On the question of authorized miracles, Lessing, taking up Hume's argument, proposed that it was a tool, in fact a *technique* by which to convince<sup>233</sup> the population of otherwise unprovable and unbelievable events, and not coincidentally placing personal revelation not only totally out of reach of the individual but even unnecessary<sup>234</sup>. It is in this climate of religious skepticism that the influence of the eighteenth century – which privileged reason over all other forms of belief – contributed to the theological arguments of the nineteenth century. Friedrich Daniel Ernst Schleiermacher (1768-1834), considered the most influential theologian of the early nineteenth century, attempted to reconcile science and philosophy with religion and theology<sup>235</sup>. Feuerbach set out to transform theologians into anthropologists, a perspective from which God was no longer abstract, but the total embodiment of both nature and man<sup>236</sup>.

France, in the process of becoming a secular state, was receptive to new ideas that appeared to be both rational and secular. It might therefore not seem surprising that Eastern thought, Confucianism and Buddhism, came to have great appeal to individuals seeking spiritual alternatives<sup>237</sup>, and Buddhism – seen as a welcome form of atheism – was introduced into Europe between 1823 and 1830 by the German scholar and poet August Wilhelm von Schlegel (1767-1845)<sup>238</sup>. The German philosopher Schopenhauer wrote that Buddhism was expressively atheistic, idealistic, and ascetic because it rejects – out of hand – pure theism<sup>239</sup>. In writing, he quotes an article that was written by a high Buddhist priest in *Asiatic Researchers*<sup>240</sup> around the 1820's. The passage was to the effect that one of the damnable heresies of Christianity is the doctrine “that a being exists who created the world and all things, and who alone is worthy



*of worship*<sup>241</sup>. In the writing of Buddhism there is no supreme being acting as the principle of creation. That does not mean, however, that the universe is without beginning. It originated, according to Buddhist teaching, out of empty space in accordance and consistent with immutable natural laws.

Monet's loss in 1911 of his second wife, Alice, and in 1914 of his son Jean, together with the horrendous losses all around him in the debacle of the European War of 1914-1918, left him with a deep sense of pain and erasure, a loss of his own history and identity. In 1913 he is described as having "*questioned the value of his own work, he was convinced that he could make no further progress and that he would never again come up to his own expectation*"<sup>242</sup>. It is at this time in the early years of working on the *Nymphéas* installation that "*he clung to his palette, determined to battle through to the end despite his terrible ordeal*"<sup>243</sup>. Monet's palette pictured not God but Nature – the "*purity of the childlike, primitive, natural being, the ideal of human harmony with nature*"<sup>244</sup>. Who he had become as an artist became now indistinguishable from the *Nymphéas* decorations – as the erotic of caressing, of touching through sight – as sight faded – narrowed to the many points of eternity. Monet was used to pouring his heart out to Alice, with all its turbulent emotions, and now his painting, above all his *Nymphéas*, that was the sole receptacle for all his feelings.

While Monet had withdrawn from formalized religion – Christianity, his own sense of spiritualism, developed through the cataclysmic moments of his life, found a connection to a Buddhism that coincided with his life-long embrace of nature's unfathomable and infinite fluidity. Thomas McEvelley<sup>245</sup> writes: "*in his old age he was influenced by Buddhism, where symbolism similar to his is found in abundance. Amida Buddha, for example, sits on a lotus on the water nursing beings towards that realization as of a man born blind who had suddenly gained his sight*"<sup>246</sup>.

### 3.3.3.2. Analysis of pictorial space in the *Nymphéas*

There is no overt religious iconography in the *Nymphéas*, rendering an analysis of its spiritual dimensions different from those appropriate to both Pompeii and Giotto. However,

much of Monet's attitude towards his choice of, and approach to, the subject resonates with the theological arguments of his time. It is well to bear in mind that religion is an institution, while spirituality is located in the individual. Monet's escape from the city to spend much of his time sitting under trees communing with nature reflected the permissions granted by France's official anti-clericism and Romanticism's retreat into the inner self, both of which dominated the century. Since the one was a consequence of the other – nineteenth century France is a story of anti-institutional revolts inspired by Romanticism's discourse of the common man – Monet's fusion of the two can be understood as typical for his era.

For Monet, Nature offers Man a *tabula rasa*, life before we were cast out of Paradise. In Rousseau's own words: "*Let us lay it down as a rule that the first impulses of nature are always right. There is no original sin in the human heart*"<sup>247</sup>. Human nature purified is now experienced through nature,<sup>248</sup> and so in the *Nymphéas* cycle, Nature's images – trees and water lilies, water and earth, sky and clouds – stand for, metaphorically represent, the yearning for authentic origin that lay at the heart of spiritual fervor in a period of institutional instability and rapid social and technological change. There are no birds or dogs, no trace of human interaction left to distract us from that origin<sup>249</sup>.

From the perspective of this examination of the *Nymphéas* cycle's indebtedness to religious sensibility, Rousseau and Monet circle one another as mentor and acolyte. Rousseau's very anti-institutional position as the theorist of Man's relationship to Nature and the World marks him out as a theologian *manqué*, and a model for nineteenth century theology. Monet's very being resonates within that model. And that model is two-fold: on the one hand, Man's self-knowledge can only come through Nature; Man is, to this extent, a child of Nature, and in Room One the viewer emerges from the pond, is as it were, birthed by Nature, On the other hand, that self-knowledge must – it is a question of responsibility – be applied to society: to this extent, society – and its institutions – are child to Man. In Room Two (fig. 3.16), the viewer becomes the adult, looking back, viewing that birth. In Rousseau's Romantic longing for an innocent Nature cast as embryonic and uncontaminated, we can detect his association with the eternal mother. Deprived of the mother he never knew, a mother who died at his birth, it seems a likely hypothesis that Rousseau shifted his sense of

protective love from human mother to Mother Nature in a manoeuvre that registered both a loss and an escape – a loss of intimacy and an escape from disappointment. Rousseau's personal history seems to bear this out: whenever he pined for love or faltered in his love affairs, he took solace by immersing himself in the presence of Nature – the woods, fields and flowers. He wrote in *The Confessions*, and I paraphrase: Nature is my true companion<sup>250</sup>.

Monet's relationship to his mother and to Nature echoed Rousseau's. Although more fortunate in that he knew his mother – her death when he was seventeen ended a close and loving relationship filled with music that had protected him from a disapproving and judgmental father. This polarized family experience seems echoed in the *Nymphéas*. Whether the viewer has the feeling of being located on the pond, as in Room One (fig. 3.15), or standing on the inverted shore of Room Two, the expanding roundness of the curved painted surfaces becomes an embrace – and the east wall's quivering, curved and vulnerable trees underline this. Yet, paradoxically, it is the stout authoritative trunks of both the north and south wall of Room Two that secure us – and Monet – from completely dissolving into the unbounded expanse, and unconditional love, that this room provokes. Monet designed these two ovals so that each one would flow into the other to give an eternal sense of continuity and a shape and consequent space beyond hierarchy – a shape found in the water lily leaves and, I would like to remark – in the outline of his own bearded face. A self portrait of 1917 is unusual in that the shape of his head and beard take the shape surrounded by a border of green brush marks floating like a lily pad on a neutral white background. Furthermore, it is interesting to observe that the relationship between the head, being smaller, and the beard, being larger, resembles the configuration of the rooms at the Orangerie, one room being larger than the other<sup>251</sup>.

Also, Monet began devoting himself to his *Nymphéas* cycle completely only after the death in 1911 of Alice. The sudden death in 1914 of his oldest son Jean, and the outbreak in the same year of World War I<sup>252</sup>, undoubtedly contributed to his focused determination, and the large new studio became his *sanctuary*, and it was especially built for the production of the *Nymphéas* installation at that time<sup>253</sup>.

Clearly, the mother plays a central role in the lives of both Rousseau and Monet. Rousseau was encouraged and raised largely by a surrogate mother, a musical aunt. Monet, after his mother's death, found affection and support as an aspiring young artist in the person of a widowed aunt who herself painted<sup>254</sup>. It was she who took him seriously enough to introduce him to the well-respected painter Armand Gauthier<sup>255</sup>.

As I have attempted to argue, Monet's life circumstances were influential in defining his relationship to Nature, God and the social realm. But the central point I want to focus on is that if Monet gravitated towards Nature as Mother, as the maternal, it is within this nexus that we need to consider the relationship between Monet's deployment of pictorial space in the *Nymphéas* and the spiritual movements of the time. I further suggest that the ambivalence I have sketched out is central to the era, and inscribed within the *Nymphéas* cycle: the Eternal is Mother Nature, and She both *is*, and *is not* – She must be both Present and Past: She is and must remain a contradiction of tense: in Room One Nature *is* – and the viewer is consequently located, while in Room Two Nature *is not*, and the viewer is suspended. For this reason, while Nature is celebrated by Monet, it is also *mourned*. In Room Two, the wispy weeping willow branches fall like a curtain on the north and south walls, and as a reflection at dawn on the west wall, enfolding us in a shroud through which we apprehend an expanding pictorial field. On the east wall, the curtain is drawn back, and the *mourning* has become the morning of a new day – *bathed in sunlight smiling over the mirrored water*<sup>256</sup> – the brightness of the Mother of us all, the mother of innocence, of purity, of chastity – and of unconditional love<sup>257</sup>. I call this an expanding field, because pictorially four water lily patches, one located at the centre, punctuate the east wall at the base; from here, diagonally to the left and to the right, and spaced equally, are seven such patches diminishing along their diagonals. If we connect to the centre these two diagonals, we have a radiating formation of lines from the centre. These lines at the same time move away on the pictorial plane, but also of course move into that plane and towards the viewer, thus linking the viewer to the plane of the picture.

In Room One, striated organic matter appears to rise from the bottom of the pond, breaking the surface to fuse with the reflections of clouds and sky. All is reflection – there is

no substantial shore to be seen – and dialogue with the other remains tentative, embryonic. Centred on the south and north walls, the surfaces of reflected clouds dominate, yielding a sense of hallucinatory spatial indeterminacy in which the cast shadows on both the right and the left pull the viewer's gravity down towards the physicality of the pond. The east wall, on the other hand, in *Green Reflections*, is dominated by the lilies on the surface, affirming through their presence a location for the viewer on the pond, providing a footing in which we sense ourselves rising. Consequently between these two pictorial spaces, a sinking and rising formation constructs a wave-like sensation, preparing us to move through to Room Two, as though in a state of transition or transubstantiation. The viewer, remember, appears to be located<sup>258</sup> on the pond itself, as though on a boat<sup>259</sup>. Who's to say how many crosscurrents can have entered Monet's mind, given the mythic nature of his project, and its significance to him as a gift not simply from one man, but from Man to those to whom he was, spiritually, responsible. Technically speaking, at least, the rising plant life from below the surface of the pond in Room One intersects with the descending willow curtain of Room Two, holding in opposing tension the rising of the morning light of Room Two and the descent of evening in Room One<sup>260</sup>, for a viewer who is both grounded and not – suspended between the earth and the water.

If the sacred Mother, and the feminine, is one significant factor in deciphering the hidden religious undertones in the *Nymphéas*, a second factor must now be underlined. It was earlier noted that theological debates during the nineteenth and into the twentieth century revolved around attempts to form accommodations between the Papacy's conservative Catholic tradition and new influences from abroad, notably Buddhism. It's appropriate to begin with the former. Christianity in general, and official Catholicism in particular, had evolved into highly institutionalized structures that were patriarchal and judgmental, and in the course of the nineteenth century far more concerned with consolidating dogma<sup>261</sup> than in demonstrating unconditional love. If Rousseau and Monet refused to participate in this, it is because such a submission to male authority would have forced them to abandon the reality of an immaculately feminine Nature that both consoled and secured them. The mix of purity, unconditional love, authentic origin and the free will that these inspired led directly to a

religious sense that was referenced to one's own personal being, an inwardly motivated spirituality where free will overcame any notion of original sin.

While the civic pride embodied in the *Nymphéas* is a timeless virtue, Monet's particular understanding of it – and here its final location seems exquisite – is cast in the mold of a biblical paradigm – the Garden of Eden. Recall that the Orangerie is situated at the end of the Tuilleries gardens, where those gardens empty out onto Place de la Concorde, one of the busiest and most urban traffic hubs in Paris. Imagine this, then: leaving the Louvre, the most famous museum in the world, one walks down the entire length of the formal Tuilleries gardens, past neo-classical sculptures and carefully tended flower-beds, to arrive finally at Place de la Concorde and the noise and bustle of metropolitan traffic, as cacophonous then as now. To the left and on a slight rise is the Orangerie. As one enters, all is silence and one is suddenly *in* Monet's Giverny – *in* Paradise – *in* his Inner Sanctum, the healing sanctuary of your own secure internal *wholeness*. As one stands there, as one walk where Monet has anticipated one will, one *enters* Nature, one enters place and time – the glint of sunlight on water, the depth behind the surface, the glow of sun on cloud, the passage of time across the cycle of an entire day, and the simultaneous presence of one's body *here-there, now-then*. Inevitable one must, one knows, leave this Eden and return to Paris, but one knows also that for a moment one has had a sense of Monet's vision of the Eternal.

Monet intended his Orangerie installation – the consummation of a life's work – as a gift to the people of France in recognition of their sacrifices in the Great War. In this he disregarded the entreaties of his dealers, not the first time that Monet went his own way. And in this can be read not just Rousseau, but Lessing as well. As mentioned earlier, while Rousseau's instinct was retreat, Lessing's was more generously to absorb and synthesize. Remember Lessing's advice I quoted before – it could have been spoken by Monet:

I myself submit to this investigation like an honest man! Look everywhere with your own eyes! Distort nothing! Embellish nothing! Let your conclusions flow as they will! Do not impede, [and] do not attempt to guide their course<sup>262</sup>!

The Orangerie installation is Lessing's *internal place*. As Virginia Spate writes, Monet called the cycle of the *Nymphéas* his *transformation*, and due to his deteriorating eye-sight, she writes "he must have been painting his memories of light, drawing on the accumulated, internalized experience of over sixty years of painting [in order that these paintings] would more precisely and subtly materialize his vision of light"<sup>263</sup>.

The Orangerie installation is a textbook case of Lessing's reasoning, demonstrating an originality and openness in the manner of its representation that even Monet himself could not have anticipated as a young artist. Monet let his observations flow, unimpeded, letting what he observed in front of him, and its memory, determine its forms and colour – yet to be named. There is not a single colour or shape event in the *Nymphéas* installation that is not under or overlaid, in a state of fusion or division, engaging the viewer to look at everything with their own eyes, to apprehend colours that optically mix and the shapes that emerge out of these colour events. We experience that mixing of the senses, of the objects of the outside merging with the emerging object from within, of which Feuerbach speaks<sup>264</sup>. Here colour and form are not bounded by outline, but break free, spilling over into adjacent areas, constantly reassigning and shifting all possible framing devices. According to Stephen Melville, "*Insofar as colour is and is not the historical bearer of a certain truth of painting that is and is not the truth of the frame in which it is contained, colour bids to pass beyond itself*"<sup>265</sup>. Let us note here Hubble's outwardly expanding universe, and what could be more descriptive of the *Nymphéas* installation than Schleiermacher's notion of everything. To apply Schleiermacher's words from *On Religion* to Monet, as though Monet himself were speaking of his painting practice (I substitute painting for religion in the quote below), the following might capture the bond of spiritual relationship between them:

At each different point of the material world you see a new arrangement that leaves no trace of your arbitrary figures, and there are no new objects within your ken. No horizon could embrace all, and there could be no eye which nothing could escape. In [painting] from each different point of view you will see new intuitions and different groupings of the old. The infinity of speculation is in the endless variety of action and passion between the same limited matter and the mind; the infinity of morals is the impossibility of inward completeness; but [painting] is not only infinite in these respects, it is infinite on every side, in matter and in form and in way of perception<sup>266</sup>.

The water-lily installation, with its sense and taste for the infinite, embraces the earth and the sky – the finite and the infinite, the material and immaterial – often just through the shifts in hue rather than in the value of the colour applied<sup>267</sup>. Each stroke or colour mark, like an atom suspended in its own presence, in its own energy in its own meaning – expresses new intuitions. In the circularity of each room there are many potential points of views – as Schleiermacher maintains – none more important than the other, each independent and true by itself yet each part of a greater whole<sup>268</sup>.

It seems only natural therefore that Monet would have approached the subject of any spiritual commitment through his own set of rules. Echoing Feuerbach, for Monet this was not understood as the construction of an intellectual position or the reasoned apprehension of a divine being, but an intimation from within his own body, not separated from nature or abstracted from the world of the senses. Creation came not in the form of an absolute being, but in accordance with the immutability of natural laws, laws that according to Buddhist tradition created the origin of the universe out of empty space. It was this empty space, this empty canvas – this *tabula rasa* – on the basis of which one could say that Monet made religion – religion did not make Monet. His religion is a personal communion with nature possessing no “*temples, altars or rituals, limited to inward devotion [...] a form of true theism*”<sup>269</sup>. Monet’s communion is human-scale – the tree trunks of Room Two are cut off at the height of a person standing on the shore – a shore or ground for the *immanence*, the potential of knowing.

The singularity of Monet’s communion through observation with nature – what was immediately in front of him, or in response to the history of gestures scripted into his body – precluded any preconceived methodology. The fusion between an intuitive creative playfulness and his own evolving internalized set of rules for painting permitted him go beyond the places and understanding he had previously constructed for each preceding painting. With the *Nymphéas* installation he reinvented painting for himself. I take issue therefore with the critic Roger Ballu’s claim that Monet’s paintings were the result of *willed ignorance*<sup>270</sup>. What Monet did was to bring to the surface through these paintings his inner self, through the gestural intuitions of colour, line, and the emerging forms that were inscribed into the memory of his body. I would say that through his repetition of image and his acute and vigilant observations, he



had constructed his own internal being – not unlike the notion of the third eye that acts. The layers of pictorial spatial organization within the *Nymphéas* cycle – one room playing off against the other, a Ying and a Yang – produced the fresh new viewpoints that he continually struggled to achieve for an ever deeper and more satisfying sense of being<sup>271</sup>.

In the end, we have in Room One the redemption attendant on the struggle towards the surface of Being, and in Room Two the sense of the lightness of becoming one with eternity: a movement from the Profane to the Divine.

In French intellectual circles, despite or because of their secular aspirations, a blend of western religion and Oriental metaphysics, engaged for many their imagination of belief<sup>272</sup>. It was only after Monet's death that a painting – a water garden monochrome – perhaps preparatory, was found in his studio with the title *Nirvana jaune*, a direct reference to Buddhist symbology, a symbology that probably became known to Monet through his friend Théodore Duret, who had introduced him and the Impressionists to the philosophy and Buddhist reflections of Schopenhauer<sup>273</sup>. Thomas McEvelley, as noted previously, writes that the story of Amida Buddha parallels Monet's own circumstance – a man born blind who suddenly gained his sight<sup>274</sup>. Walking into both rooms, and having just come from the gardens of the Louvre, there is a shift between the Landscape of the Garden and the individual marks that are suspended beyond the surface of the canvas. Time – however infinitesimal – shifts the viewer's apprehension of these marks from single strokes of coloured paint to recognizable images. There is no visual rest until one gives over completely to this movement, and just simply allows it to fill that part of ourselves that is beyond judgement, achieving a fusion – an acceptance of one's own presence in response to one's perception of the outside world as an exchange of energy. It is this event that fills the empty space, the white space on which Monet insisted as the ground for painting. Monet painted the *Nymphéas*, as the Duc de Trevis recalled, on a vast and empty stage<sup>275</sup>. In its presence in the Orangerie, this meditative exchange of energy not only surrounds one completely – despite the pauses between the painting sections – but it simulates more than vision: it is a palpable tactile experience. But while Monet was clearly attracted to Buddhist thought, and no doubt to its anti-theistic cast, Buddhism brings the world together through release from the material world.

Monet's paintings, however, are very materially attached to the body-in-the-world – to the extent even that he avoided talking about his own death. The human scale of the rooms – the very fact of their three dimensionality, the dimensionality within which nature must be experienced, permits the evocation of the smells and textures and temperatures that are a part of the experience of nature's tactility<sup>276</sup>. Noël Carroll writes in *Being Moved by Nature: between religion and natural history*:

[...] In a secular society it is not surprising that there will be a hostility towards any religious veneration of natural beauty and at the same time nature will become a refuge for displaced religious emotions [however] emotions aroused by nature [...] can be fully secular and have no call to be demystified as displaced religious emotion...being moved by nature is a mode of nature appreciation that is available between science and religion<sup>277</sup>.

Monet died on December 5, 1926. He had confided to his closest family and friends that he did not want a religious ceremony, and he is reputed to have said: "*Bury me as if I were just a local man... Above all, remember that I want neither flowers nor wreaths. Those are vain honours. It would be a sacrilege to plunder the flowers of my garden for an occasion such as this*"<sup>278</sup>. Also, black – the colour of death – was a premixed pigment that Monet, in search of light and in reaction to the tradition of chiaroscuro, intentionally avoided<sup>279</sup>. It is recorded that when Clemenceau arrived late for the funeral and saw that they had draped his coffin in a black flag, he tore it off, ran to Monet's bedroom and exchanged it for his faded flowered bed cover, exclaiming: "*No black for Monet*"<sup>280</sup>.

In Monet's own words to Geoffry, we can detect the artist's elision of death with those elements – light, movement, repetition and reversal – that he brought to bear on the *Nymphéas*: "*I want to always be before or on it*" [the sea, and] "*when I die to be buried in a buoy*". Writing in the 1950's, Seitz put it this way: "*Spiritually Monet was a man of Nature, not of its objects, its mysterious processes, storm wind, rain, fog and darkening and lightening. And he made the final renunciation of the thorough going pantheist – that of the self before the universe*"<sup>281</sup>.

I would like to end this section on spirituality with this memorial from Clemenceau:

[...] Monet had been possessed by the idea for the Water Lilies for some time. Every morning, he spent hours in silence on the banks of his pond [...] With a burning intensity he examined the outlines, the combinations, the degree of penetration in the turbulence of the flaming light. That which he had conquered with personal assimilation as he pursued a more comprehensive interpretation he now sought to fix by determining the barely perceptible aspects of the inner light of momentary things, that light that radiates endlessly into the universe<sup>282</sup>.

### 3.3.4 Scientific Beliefs (concerning the optical system)

#### 3.3.4.1 General context

The nineteenth century is a moment in the physics and physiology of optics that sees major paradigm shifts in how each comes to be understood, and we find throughout the period a working out of what might at times seem like contradictory theories. Along with an evolving understanding of the eye's optics – including a recognition of its binocularity and the existence of two different types of receptors – there is as well a shift in understanding the nature of light. Previously thought to be constituted by straight continuous lines, it came to be understood as a periodic wave motion, discontinuous vibrating lines at a particular and calculable speed. Some of these disparities between older theories and new understanding of both vision and light are worked out at the time through the subjective experience of the body. Physics, physiology and psychology come together but not always neatly, chronologically and in synch. In the general context of optical beliefs important to the nineteenth and early twentieth century I will attempt to bring these three aspects of optics together.

The corpuscular theory that light traveled in straight lines was still part of the popular understanding concerning the nature of light in the early second half of the nineteenth century. An example of this is a small pocket book outlining the principle concepts of optics and vision. *Easy Lessons in Natural Philosophy, Natural History, Mechanics, Chemistry, Electricity, Optics, and Acoustics*<sup>283</sup> of 1864 was published for both teaching purposes and the layman. Its adherence to corpuscular theory is interesting because the wave theory had already been proposed in 1801 by Thomas Young (1773-1828) who had concluded that light

is a wave in ether. I will be discussing this theory later on. The Newtonian corpuscular theory held that "*light consists of particles that move through space in straight lines, [...] when these particles encounter a refracting or reflecting surface they set up vibration in the particles that compose it*"<sup>284</sup>. And from the minutes of the Royal Society that recorded Newton's talk, "*he distinctly stated that light is a 'multitude of small and swift corpuscles springing from shining bodies, red having the big corpuscles and violet the smallest*"<sup>285</sup>. But the inconsistencies remained troubling. Robert Hook (1635-1703) had argued against the possibility of white light being the sum of all other colours as Newton (1642-1727) had demonstrated with the prism. Hook<sup>286</sup> thought in that case that white light was a confused admixture of all the other aggregate rays, a corpuscular mixture. He challenged Newton to produce a mixture of coloured pigments that would add up to be white since the concept of light as a material corpuscle did not appear to be consistent with Newton's white immaterial light.

However problematic the issue of light might be, the layman's account as it remained in the middle of the nineteenth century is important for those who, *like Monet*, would not have been at the centre of the debates. I want to paraphrase from the above-mentioned book because it captures nicely the concept of light as a *physical* sensation, and its consequent impact on comprehending vision.

Hook<sup>287</sup> explains the general properties of light, and its effect on the organ of vision, the reflection of light from the surfaces of bodies, the properties of the refraction of light, or the change it undergoes in passing through transparent bodies. The phenomenon of colour, and the peculiar *modification* of reflected and refracted light, are also included. Light is a rapid undulation or series of vibrations produced by infinitely small particles of luminous bodies that exist in an elastic and thin medium or luminous ether. This medium is any transparent space through which light passes – air, water, and glass. The ether is interposed between the eye, the seat of vision, and these small luminous bodies. The undulations (recognized by Young as waves) of the luminous bodies produce vision in that they stimulate the optic nerve by means of vibrations – producing an effect called light. This light travels in a straight line directly from the luminous body that produced it towards the part it will act on.

Every luminous point proceeds in all direction [in the hundreds and by degrees if nothing interferes], with a *ray* of light – the smallest portion of light that can emanate from a luminous body. The luminous body consists of *ponderable* matter, and is made up of the ultimately physically perceptible atoms called *luminous points*. Since everything and everybody is made up of molecules or atoms, a luminous body is made up of an assemblage of these luminous points. The transmission of light onto apparently opaque objects depends on their degree of thinness or transparency, also termed *translucency* of the material. As long as the ray of light travels through the same medium, it stays in a straight line; however, when it travels through a different medium it bends, and this is known as refraction. By varying the obliqueness of the surfaces of any refracted body, the degree and direction of the refracted rays can vary. That is why a lens by its shape can focus a ray of light. A light ray that impacts on an opaque object also deflects at the angle of incidence. Shadows are the outer limits that describe the illuminated objects.

On the matter of catoptrics, or the mirror phenomenon of reflected light and the phenomenon of vision produced by reflection, the angle of reflection is equal to the angles of incidence. Depending on the angle of facing mirrors, with an object placed between them, the number of images produced by the object's reflection in the mirrors increases as the angles diminish or become parallel to each other, at which point the number of reflections reaches infinity. The image becomes smaller and its outline somewhat defective as the various focal lengths change and converge in the eye or convex mirror. Convex mirrors also exhibit a remarkable phenomenon, in that they invert the image.

The book goes on to treat colour. It is light that imparts colours to an object. This is due to the effects of light produced from the reflection off the particular colour of the object's surface, and colour is modified by refraction. For example, prismatic colour: in the sequence of the spectrum we have *violet*, a compound colour, *indigo*, a compound colour, then *blue* an original colour, then *green* a compound colour, *yellow* an original colour, *orange*, a compound colour, and finally *red*, an original colour, These are unequally blended and it is impossible to say where one begins and the other leaves off. Imperfect lenses show prismatic coloured fringes, which have been corrected by the achromatic lens<sup>288</sup>.

I now conclude this summary with a quote from the book that reveals the strength of belief in the primacy of vision.

[...] The science of Optics reveals to us the intimate nature and affection of light; and as we judge from the various objects around us, chiefly by our sense of sight or vision, the science of optics becomes interesting to us all and enables us to comprehend many of the highly interesting, curious, and important phenomena connected with vision<sup>289</sup>;

It is also important here to contextualize the dramatic shift that had occurred since the seventeenth and eighteenth century, namely the belief at that time that optics and light had as its source of reason, divine origin<sup>290</sup>. In the 1864 book on natural philosophy from which I paraphrased, no such reference to God exists, direct or indirect, and it is dedicated simply to knowledge for a progressive and better world. The study of natural phenomena, in which light and vision were interrelated, was just one more aspect of coming to know the body better. Bichat had already parceled the body into individual specific systems and Martin Jay commented on the shift from geometric laws of optics to the physical dimension of human sight.<sup>291</sup>

Before proceeding to discuss the ophthalmology of the eye and vision, I will turn to the arguments that changed the concept of light from line to wave, and furthermore came to understand that light energy and magnetic energy were similar and interdependent, creating the electromagnetic field.

#### *Wave theory*

The argument lay between the authority of Newton and his straight line theorems<sup>292</sup>, on the one side, and on the other side the comparison to sound – in that light could go around objects as shown by Grimaldi (1618-1663) – and the demonstration of refraction in 1665 showing bands of coloured light on each side of a shadow<sup>293</sup>. As mentioned, Thomas Young had concluded in 1801 that light is a wave – though he had not yet separated the wave into different colour bands – which exists in an ether whose character is like air and acts just exactly as sound waves act in the air<sup>294</sup>. In the process of trying to destroy Newton's emission theory of light, Augustine Jean Fresnel (1788-1827)<sup>295</sup> took Young's conclusion and proved his theory by the laws of diffraction, which could be demonstrated through the diffraction

pattern and calculated mathematically. It was only in mid century that the wave theory came to be fully accepted, and only due to this ability to accurately calculate it<sup>296</sup>. In this process of complex experiments by Newton Young and Fresnel, it was concluded

[...] that light possessed a periodic nature known as the periodicity of light. The interval is related to the colour like the refractive index and constitutes a new characteristic of a particular kind of light. [...] *it must be assumed that this periodicity in space and time is regular over long regions of the light ray, but experiences disturbances many million times a second*<sup>297</sup>.

James Clerk Maxwell (1831-1879), in *A Dynamical Theory of the Electromagnetic Field* of 1865 writes:

[...] it has to do with the space in the neighborhood of electric magnetic bodies, and it may be called a *dynamical* theory, because it assumes that in that space there is matter in motion, by which the observed electromagnetic phenomena are produced. [...] We therefore have reason to believe, from the phenomena of light and heat, that there is an aethereal medium filling space and permeating bodies, capable of being set in motion and of transmitting that motion from one part to another, and of communicating that motion to gross matter so as to heat it and affect it in various ways<sup>298</sup>.

In Maxwell's theory, a moving magnet can start an electromagnetic wave, and a moving electric charge is the usual source. And this, for Maxwell, confirmed the existence of the ether. Monet's colour and the form of the marks on the surface of the *Nymphéas* resonate with Maxwell's theory. These marks charge the surface, from which they emanate out into space towards the viewer, constructing the sensation of an ether between viewer and work. About the same time, Heinrich Rudolf Hertz (1857-1897) – after reading Maxwell's papers – discovered electric waves, deducing this from Maxwell's prediction of the oscillation produced by the magnetic field, whose velocity in the propagation of electromagnetic induction that Helmholtz announced in 1871 to be that of light<sup>299</sup>. Now both the frequency and length of a wavelength, and from that the calculated speed it traveled, became recognized as the speed of light<sup>300</sup>.

*The eye and the reception of light.*

One of the most important optical instruments to be developed in the nineteenth century that could shed light on the nature of vision was the ophthalmoscope designed by Herman

Ludwig von Helmholtz, (1821-1894) in 1851. It consisted of a microscopic lens that could see into the eyeball and enlarge it, observing in this way the projected inverted image on the retina's concave surface, and through the reflection by a small set of angled mirrors look easily and studiously into the eye. Helmholtz wrote:

[...] That I may hold the expectation not to be exaggerated, that all the alterations of the vitrious body and the retina which, until now, have been found in cadavers, will also permit of recognition in the living eye – a possibility which appears to promise the most remarkable advances for the hitherto undeveloped pathology of this structure<sup>301</sup>.

Among ophthalmologists this is considered the most significant sentence ever uttered<sup>302</sup>!

First, a brief description of the pathway of vision as understood in 1922. The pathway of vision was considered *the transformation of purely physical phenomenon of light into the psychical phenomenon of sight*. By this point it was a *wave* of light that strikes the retina of the eye, with the resulting agitation transmitted to the optic nerve. From the optic nerve it is carried by "the external geniculate body, the pulvinar of the optic thalamus and anterior quadrigeminal body, from which it is relayed to the cuneus of the occipital cortex and there transformed into psychic sensations of sight"<sup>303</sup>. This, however, is not a simple physiological process, because the image is upside down and inverted on the retina – as in the camera, and two eyes are involved, the image of which must be co-ordinated if binocular function is to result. The superior field falls upon the inferior part of the retina, and the inferior field upon the superior one. Towards the end of Monet's life, his binocular vision was disrupted while he was working on the *Nymphéas*, having lost functional sight in his left eye due to an eye operation.

This explanation of the basic mechanisms linking light and its reception by the eye as theorized at the end of the nineteenth century re-constructs between them – light and vision – a continuum linking the nature of light with the nature of the body. It can be thought of as a linkage between the inside and outside, a relationship akin to that previously known between the body of the camera obscura and the world outside, since seeing was – with the camera obscura – identified with knowing. Now the accumulating knowledge of the body, that part which was not the physiological act of seeing, but rather the psychological act of perceiving,



shifted that idea of knowing to the *unseen but subjectively felt and intuited* knowledge that arises from within the body. As microscopes and telescopes became more and more powerful, their lenses adjusted and corrected, the *physiology* of sight or vision became detached from psychological concerns. In fact, it entered the realm of industry and eventually domestic consumption, which benefited Monet by his being able to have fitted a pair of glasses with sophisticated new Zeiss lenses such that his right eye regained sufficiently good vision to continue working on the decorations. In the early part of the nineteenth century the camera obscura, with its captive image in a dark interior, was replaced by the fixed camera image. The reflected image of the external world – heretofore captured fugitively by the camera obscura – could now be released back into the world *in full light* – at home, even – as a concrete fact, a photograph, or as Martin Jay<sup>304</sup> calls it, *the fixed gaze*. The photograph as Susan Sontag<sup>305</sup> writes, furnishes evidence, captures experience, diminishes the doubt of memory – and represented a new consciousness that came to depend on *fixing* or isolating the meaning of memory<sup>306</sup>. The photograph offered a record of origin to which it was now always possible to return. The *Nymphéas* cycle was painted in Monet's studio, and one can see that he had photographs as an *aide-memoire* around him in the studio.

While Darwin was interested in the organic origin of the species, Johann Wolfgang von Goethe<sup>307</sup> (1749-1832), writer-poet and scientist, became most interested in the phenomenon of colour as it existed in the original subjective perceptual experience of the individual. The Newtonian mathematical system of prismatic colour held little meaning for Goethe, whose romantic view of art led him to concentrate on what was *particular* – the inner laws or intuitions of the individual. His expressionistic colour theory, *Physiological Optics* (1810), was a study into how the eye perceived light in its sensory capacity. He began by studying the effects of light and dark contrasts on vision, and laboriously recorded perceived colour when looking at transparent mediums that produced spectral colours on their edges – like an optical prism's capacity to merge colour<sup>308</sup>. He also made a distinction between the material pigment of colour and light itself. For this he experimented with looking at coloured light and then turning to a white surface. It was in this way that he discovered simultaneous colour or afterimages that were significantly produced in the eye as the white background remained

white<sup>309</sup>. Goethe's colour demonstrations also helped to clarify the nature of *coloured* shadows<sup>310</sup> (fig. 3.60). As an example of this in Monet, one can see the use of complementary colour on the edges of the tree trunks in *Clear Morning*.

Herman Ludwig von Helmholtz<sup>311</sup>, (1821-1894), the first – in 1879 – to mention eye movement, showed that the eye moved in jerks and pauses, and that it was only in pauses that the eye was actually reading. As I will suggest in greater detail in the analysis of this section, Monet's method of episodic observation fragmented the continuous surface of the water into discrete parts. Helmholtz also measured the speed of nerve impulses and worked out that there were three different kinds of light receptors, first seen in the retina by Gottfried Trevenius in 1830. Each receptor, he determined, was sensitive to a different wavelength of light, and that when looking out of the corner of the eye there is no colour, just receptors sensitive to degrees of lightness or darkness<sup>312</sup>.

A significant controversy at the beginning of the twentieth century concerned the colour black: was black part of the perceptual colour field? This problem was introduced principally because colour reception in the eye was found to have separate receptors for colour and for degrees of lightness – including degrees without colour or colourless. The physicists – Young, Maxwell, and Helmholtz found this idea impossible. They reasoned that to admit blackness to the rank of sensations ignored the fact that darkness – black – is the absence of light energy, and as we know, in Monet's painting, the colour black is intentionally absent. It was therefore left to the psychologists to deal with the question.

The theory of Ewald Hering<sup>313</sup> stipulated just such a psychological colour theory. Hering's theory of colour perception was based on the three oppositions, black-white, red-green, and blue-yellow. The idea of value – the scale of light to dark – became an important part of Michel-Eugène Chevreul's<sup>314</sup> colour theory, published in *On the Law of Simultaneous Contrast of Colours*.

Chevreul, a chemist in the preparation of dyes at the Gobelin tapestry workshop, took up the problem of simultaneous contrasts, one colour in proximity to another. Chevreul noticed that such contrasts had the ability, if superimposing the optical complementary colour, to pervert

the originally intended colour contrast as neighbouring colours influenced each other. His approach was more empirical than mathematically theoretical. The law that he established was "*where the eye sees at the same time two contiguous colours, they will appear as dissimilar as possible, both in their optical composition and in the height of their tone*"<sup>315</sup>. Monet's use of complementary colour strokes – blue / orange in his painting *The Clouds*, for example, clearly understood their optical mixing. Chevreul also talked of complementary colour contrasts, and *after images* as already understood in 1805 by Claude-Antoine Prieur<sup>316</sup>. Chevreul also developed colour nomenclature, designating the relationship of values on a scale from black to white, the modification of hues with the admixture of another colour from pure to saturated pigments. From the scale of black to white he developed the three dimensional colour wheel, published in 1839 in Paris as *De la Loi du contraste simultané des couleurs*. What was important to Chevreul was that the artist apply *intuitively* contrasts and harmonies and analogies of colours<sup>317</sup>.

Wilhelm Max Wundt<sup>318</sup> (1832-1920), with his publication in 1874 of *Grundzüge der Physiologische Psychologie*, has come to be known as the founder of experimental psychology. Wundt believed in the purity of introspection, and valued the facts of immediate apprehended consciousness, which experience or previous knowledge, or anticipation, should not contaminate. This helped to get consistent subjective observations. Wundt's observation can be linked to Monet's desire to see the world anew, opening his eyes for the first time. Wundt concentrated on the emotional tenor of a form that could be explained by the kinesthetic response of the eye. Again, Monet's approach to painting his subjects – that is, his use of different marks to make up a form that would in very particular ways activate the movement of the eye and charge the painting with emotional tenor – is, I suggest, very much in tune with this idea. Wundt's research indicated that the eye responded differently when its focus followed a zigzag line than a wavy line – the latter was easier to follow. The eye also easily followed vertical and horizontal lines, but when it followed an oblique line it seemed to be moving in an arc<sup>319</sup>. This search for the dynamic properties of vision, as I have described, also had its parallel in studying the dynamic properties of the electromagnetic field.

The physicists' idea of light traveling in waves put into question the principles of pictorial perspective that Newton's straight lines had affirmed. However, it was now also the awareness of the physiological problems of binocular vision – the reception of two separate images – that had now to be superimposed on the wave theory, making the problem of vision even more problematic. At the same time, it was also beginning to be understood that it was not in the perfection of vision, but through its aberrations – demonstrated through experiments with optical illusions – that the mechanism of vision could better be examined. As a consequence, the study of self-induced colour (as in knocking one's head), lines that blur in darkness, the fact that the eyeball is constantly moving in all possible directions although the image appears to be still, and after-effects of colour and shape – all these helped gradually to clarify just how vision worked<sup>320</sup>. Monet's own experiment with the overlapping of brushstrokes, their movement and colour, achieved optical illusions in a similar manner.

An article in *The American Journal of Physiological Optics* in 1922 is particularly interesting regarding the perception of pictorial space and binocular vision. The research involved locating in the brain the phenomenon of vision anomalies. In this case, the anomaly was the inability to maintain binocular vision. Binocular vision had been understood in antiquity, but it was not until the 1830's that the seeing body was understood to be essentially binocular, and the question was raised: how do we see with two disparate images a unified single image<sup>321</sup>? Because the patient's eyes fell into the habit of diverging, it was a perfect case for exploring binocular vision. At times the image of the maladjusted eye was ignored, at a great cost. This was achieved by automatically severing the relationship serving the simultaneous connection between these two divergent points. The Hypothesis was that the retinal points come together in common brain cell connections. The physical path was followed and the anomaly was discovered to occur not in the path leading to the visual cortex, but after that in the psychic sphere of the senses. The physical pathway was thought of as consisting of many separate fibers, the end of which left the retinal curve at the centre of the eyeball.

[...] Each fiber receives a separate impression of the outer world, and that impression is wired, as it were, to its own individual cell in the cortex of the brain and it is here interpreted in accordance to its intensity and its relationship to the impressions received by the other cells<sup>322</sup>.

I think it is a good assumption that Monet's optical mixing through colour strokes forms a background to Georges Seurat's<sup>323</sup> (1859-1891) *peinture optique*, given that Seurat in his early work employed impressionist techniques in his painting *en plein aire*. As we know, Seurat's later development gained from the era's scientific understandings concerning the eye's functioning, which can be related to the single point (of each fibre) giving a separate colour impression of the world. In any event, it was now beginning to be understood that everything depended on an investigation of some hard-wired mechanism whose interpretive function was relative to that which was adjacent or around it. In other words, the *internal* field of perception – the ordinary business of the mind, was itself subject to, and acted on, another *external* field that could be associated with the general electro-magnetic forces in the world at large – most obviously light itself. Moreover, this internal field had the capacity to compensate for either physiological deviations or, as Charcot and Freud had already pointed out, subjective states. Research such as this is representative of the interest in psycho-physiological phenomena that brought together physics, physiology and psychology during the period of Monet's life.

### 3.3.4.2 Analysis of pictorial space in the *Nymphéas*

[...]The attempt really to 'see' oneself 'seeing' is as vertiginous an undertaking as to 'think' oneself 'thinking', and as soon as Monet embarked upon it he found that he had not only to free himself [...] but also to be revising and continually checking his own methods and the way in turn they were shaping the way that he saw<sup>324</sup>.

Andrew Forge<sup>325</sup> sums up the very questions that these new *Nymphéas* paintings posed for Monet, and those questions represent a reversal of the *plein air* tradition that had marked the beginning of Monet's career. The task had become to paint not only *what* he saw, but *how* he saw.

*The Mind's eye: how Monet saw.*

That the *Nymphéas* is painted in the studio is remarkable, and not just because that is at variance with the history of Monet's practice. It could be said that the shift reflects the larger discoveries in physics, physiology and the relation between optics and psychology that occurred during Monet's life. Within the field of optics, the act of perceiving came to be recognized as an indirect process that involved not only the eye itself, the retina, but the manner in which images are accepted by the brain. There is almost an allegorical quality to Monet's return to the studio. Having initially abandoned the studio in order to see *with fresh eyes*, a stepping away from the enclosing body – a *tabula rasa* intended to renegotiate the relationship between painting and light – Monet returns to the studio, comes back, one might say, *for the first time*. No longer to see *outside* with fresh eyes, but to now see from the *inside*: inside the responses gained from a lifetime of observing his own responses to the energy he found in that light he had sought – its relationship to emotion, to his feelings: light's *psychic energy* now understood as both without and within.

To call this *psychic energy* is not just to employ an incidental phrase. While the term does suggest a nineteenth century parlour favourite, the séance, the allusion has deeper relevance in that it reveals the period's fascination with the concept of energy, its secular acceptance of energy as the underlying force behind appearance – a fascination that was expressed in the movement known as *vitalism*. Consequently, I use the term to distinguish between a practice that would simply apply the *terminology* of psychology to the comprehension of experience, on the one hand, from a practice that – like Monet's – would seek to apply to the recognition of emotional energy the force of energy, specifically the pervasive energy of light itself. It is for this reason that Monet's return to the interior of the studio seems an appropriate if counterintuitive response to the question of light. If light is a force of energy, its presence is not confined to the retinal world, but exists equally within the world of perception – inside the physiology of the brain, of course, but also within the extended field of emotional response – and available to the memory of those responses. Monet, it could be said, came to appreciate that within the studio he was not painting from memory, but *within* memory: he was not recapturing the image – he was *rehearsing* it. Spate catches a hint of this thought

when she writes: "*given his damaged sight, he must have been painting his memories of light, drawing on the accumulated internalized experience of over sixty years of painting and using the long remembered gestures of embodying that experience*"<sup>326</sup>.

*Monet and the physiology of his vision*

Memory likes to be reminded. For this purpose, Monet simulated the light of the external world within the interior architectural context of the studio. For this reason, the first thing he did on arriving at Giverny was to have installed in his first studio "*a huge window [that] now flooded it with light*"<sup>327</sup>, and later his new studio of 1916 had "*a huge skylight and a system of awnings through which the light could be filtered as he wished, provided the artist with the means to recreate the luminous atmosphere of the lily pond*"<sup>328</sup>.

But as the means advanced that would enable him to construct the studio he needed in order to paint the *Nymphéas*, Monet's eyes deteriorated. Much has been written about the influence of this on his colour and form, but not the influence of his monocular vision on his pictorial spatial representation. I suggest that this deterioration focused his mind – led him to think about the nature of light and vision more than ever. Every optical experience was now critical. Though this was a man in fear of losing his sight, he was not blinded by it, and in the process it challenged him more than ever to complete for himself an ultimate legacy – the summation of his vision, his life's work.

As we have seen earlier, Clemenceau became France's premier in 1918. The *Nymphéas* project, now already several years in the making, was his choice as Monet's gift to the French people. There was a double urgency now in its completion. Once gifted, the work needed to be delivered as soon as possible; of even more concern was Monet's deteriorating vision, a chronological summary of which is first mentioned in 1919<sup>329</sup>. By February 1918 Monet had already completed 12 panels and he mentioned that things were going well as long as his eyes did not play tricks. Some of the panels he had already started in his old studio – *Green Reflections* of about 1915 and *Reflection of Willows* in one of its versions. In 1919 it is recorded that his eyes were bothering him, and Monet took a break from the *Nymphéas* to paint *en plein air*, possibly to refresh the memory of his vision. From here on his vision

steadily deteriorated, and by 1920 his eyesight prevented him from working in nature. Monet had at this point painted many more panels and experimented with a variety of different groupings so that by 1921 he had enough for two rooms. He spent the summer again doing research – painting outside, though his eyes were getting steadily weaker. Working against his failing sight, by the Spring of 1922 he nevertheless was at work on the project, arranging and rearranging the panels by placing them in an oval in his large studio. Once again he worked outside during the summer of 1922, acutely conscious of losing his sight: the left eye had by now only ten percent vision, though the right eye was healthier. On the advice of Clemenceau and his doctor, in September Monet visited the ophthalmologist Dr. Charles Coutela<sup>330</sup>, who scheduled two operations – for January and July, 1923 – to remove the lens due to a cataract which caused opacity of the eye. Monet was now wearing a black patch over his left eye. By September 1923 he could see to paint quite well close up with his right eye, but not from his usual step-back position of 5 to 15 feet. His long distance view, however, was adequate. He was troubled with colour distortion, yellow and alternately blue, and in the following months blue dominated his palette. In an attempt to correct this, he tried a number of different glasses, each one giving him a different kind of vision. By October of 1923 his colour perception is back and he is able to return to the project, though he mentions that "*a painter's vision is difficult to restore*"<sup>331</sup>. It is at this time that he begins to make a relationship between adjacent compositions and continues to work on the large panels to achieve the light effect he was searching for – what he called his *transformations*. It is only finally after September 1924, now fitted with his custom-made Zeiss lens, that he returns to work with near perfect vision in one eye<sup>332</sup>.

#### *Binocular disruption and monocular vision*

If this recovery of sight is a success story of sorts, though one that evolved over almost two years – it remains a fact that Monet that by 1923 he wore a black patch on that eye that gave him monocular vision. His perseverance is, of course, rightly appreciated: "*This little man of eighty four years[...]*sees with only one eye with glasses, the other blocked with a darkened lens. And these colour tones are more exact and true than ever"<sup>333</sup>. I might add that technological advances in medicine and optics – certainly his operations, and as well the



optics of his new Zeiss lens, needs to be given its due recognition. Monet's indebtedness to the lens is clear as we follow his attempt to correct colour distortion over the period leading up to acquiring it in 1925, when he is finally able to correct and recover his colour. With his new glasses he no longer needs to refer to the names of the colours printed on the tubes, and he is able to perceive his usual organization of colours on the palette<sup>334</sup>. Spate writes "*it may have been in the joy of regaining his vision retrouvée that Monet painted the scumbles of rose-and blue tinted whites which dematerialized the watery clouds*"<sup>335</sup>.

I want to concentrate for now, however, on the matter of distance, which involves proximity and spatial perception. As mentioned, it was important that Monet regained his ability to see his palette up close, and his sight after the operation enabled him to work at the distance he required in order to put his marks on the surface of the canvas<sup>336</sup>. But in the act of painting – particularly with such large images – he needed to step back in order to see the whole, and it was here when he stepped back beyond the middle ground of five to fifteen feet that he had difficulty. I therefore find it interesting – though for Monet it was, of course, infuriating – that it was only at a much greater distance that he could see it again. An aspect of painting that is largely ignored is the necessity for the painter to be mobile – to be capable of calculating the spatial dimensionality of an image through the painter's own occupation of multi-dimensional space. In effect, the painter must be able to see the work from different points of proximity; he or she must *take their distance* from the evolution of the work. This was of course even true for Monet's medium size *in situ* paintings. There is a picture of him seated at the centre in front of an approximately four-foot square painting on the easel near the pond in his garden (fig. 3.61). He can only see the view by turning his head to his side and then turning his head back away from the view to face his painting in order to record what he had seen. His position was also close to his painting – half sitting, half standing about an arms-length away. He would also have moved away from the easel to *feel* the space of the image in the painting – his ability to work with a full range from close up to more distant appraisal was a painting methodology that had been well exercised. Undoubtedly this experience helped him telescope in his mind the image he had of the *Nymphéas* in the act of painting it. But if he could not now see the usual five to fifteen feet, and was forced to view it

at a greater distance, this would have the effect of restricting him to a much larger and more encompassing view than he had ordinarily been used to.

This could, to some extent, account for the spatial planar variations of the water's surface in the *Nymphéas* paintings. Other ideas have been suggested, and each one no doubt contributed to some extent to this variation. Grace Sieberling's<sup>337</sup> explanation is that the changes and pictorial adjustments took place over time as canvases were shifted, changed, and eliminated.

[...]Monet's series involved subtle and changing relationships which were worked out not at the start but at each step of the progression. New formats and new colour relationships grew out of the changes the artist saw in nature and in his work. When he moved closer to his motive or saw it at a different time or when he eliminated the bank of the water lilies, he altered the terms of the series. These modifications not only opened up new possibilities for the next paintings, they also changed the relationship of all the others. Because the canvases were thought of collectively and worked together, each new direction had to be integrated into the whole or rejected<sup>338</sup>.

I would like to propose another reason for the shifting planes on the water's surface: that the loss of binocular vision, and Monet's consequent monocularity, exerted a major influence – one that in fact coincided with his own perceptual predisposition – on the effects we see in the *Nymphéas*.

At issue, let us be reminded, are three factors: firstly, the physiology of his condition – the condition of his eyesight; secondly, his long-standing methodology of seeing; and thirdly his shift from the immediacy of *plein air* to painting in the studio. All three play their part in the acceptance of the optical conditions implicit and explicit in the *Nymphéas*.

With normal or binocular vision, we see in parallax with both eyes. We are in effect seeing from two positions that provide an ability to calculate depth in an extended *wrap-around* field. When one eye no longer sees, one loses half one's visual field. Additionally, because only half the light, as wave energy converted to synapses, is entering the visual cortex, only half the colour intensity is being received as well – and this is the situation in which Monet found himself from about 1919, or even earlier. Since normally each eye sees differently – they are never identical – with this loss come certain distortions, such as colour *imbalance*. But most dramatically, there is a flattening out – not only of three-dimensional

space and objects, but also of the intensity by which we perceive two-dimensional images and colour, in Monet's case in his paintings. Monet would be tempted under these circumstances to increase or *dramatize* the paintings' tactility and three-dimensionality. The viewer of the *Nymphéas* is thereby enrolled into a *hyper reality* that Monet pursues as he attempts to *reconstruct light itself*. Everything that could contribute to it, Monet deploys, whether it is variations in surface, exaggerated spatial perspectives, highly charged and intense vibrations of the overlaying marks, or contrasts of light and dark. This hyper-reality arising from Monet's restricted vision and accompanying increased emphasis on light as energy – as a force – finds expression in strong oppositions: large marks and small marks, warm colours and cool colours, the tufts of wild grass in proximity, and the infinite unbounded space of the water. Although it must be remembered that these paintings evolved over many years, it is the increasingly fragile circumstances of his life in these last few years that impresses itself on Monet's dream of immortality. The *Nymphéas* is only realized in the space between the impending darkness and the preciousness of light's last moments. Light is not a matter of its effect; *it is matter* in itself. The urgency of Monet's predicament can be felt in Clemenceau's desperate fear at the prospect of the artist re-working the now apparently finished canvases – Monet had destroyed so many others – and did everything to discourage Monet from further improvements: "*then you conceive the absurd idea of improving others.*" Nevertheless, Monet in a final moment of great optimism, reworked some aspects of the clouds and water, *improving* them through increased dramatization, and to Clemenceau's delight the paintings now sparkled more than ever.

Examining this *sparkle* closely, what do we have? Monet was forced to paint close to the canvas. Since they are large, he would be constantly shifting his position across their surface. The shifting planes of marks can be seen as records of his shifting attention as his reduced field of vision causes him to scrutinize each particular area of the painting. His relationship to the water's surface would be close, physical. One can almost trace in this way the different positions he might have taken in front of his canvas as he constantly integrated his changes and additions with each new layer of marks, overlapped to construct a fresh sense of unity. Also, at 84 Monet was not agile enough to get down on his knees to paint the

lower part of the canvases; he painted them close up, but well below his own centre of gravity. This would create an acute angle between him and the lower water lilies that mark the pond's surface.

To summarize, there are numerous shifts of plane in the water's surface that can be easily differentiated in the paintings: In Room One, in *The Setting Sun* (1921) on the west side there are eight such shifts; in *The Clouds* (1923-24) on the north wall there are fifteen; in *Morning* (1921-26), on the south wall, fourteen; in *Green Reflections* (1917-21), on the east wall, ten. In Room Two, in *Reflection of Trees* (1922-24), on the west wall, there are again ten; in *Morning with Willows* (1916-26), thirteen; in *Clear Morning with Willows* (1916-26) there are also thirteen; and in *Two Willows* (1924-26) seventeen, though here they are more subtle to distinguish. Taking into consideration the various sizes of these shifts, I suspect that their radius is related to the radius of the reach extending from his body. In other words, the body's presence *is visible* in these shifting planes. Spread over all the surfaces, then, there appears to be a consistent set of oblique and reflecting planes.

The natural question one might ask is why Monet, working also from a long view – beyond fifteen feet, would not want to correct these recognizable disparities in the water's surface level. I personally researched and experienced looking closely at the reflections in the pond at Giverny. With its complex, variously coloured reflections and protruding or submerged plant life – all agitated by the wind into various and ever-changing ruffles of wavelets giving each area of the pond a unique pictorial experience – I came to the conclusion that such was the intensity of this experience that as one shifted one's gaze to another part of the surface, one does indeed see very differently. Each act of looking becomes a perceptual episode in itself, and translated to the paintings, an episodic experience of comparative pictorial locations. Monet would not have been unaware of this, and his acceptance therefore of the shifting variations of the pond's level, however they evolved, I believe can be attributed to his interest in merging himself with his experience of nature rather than the experience of traditional or conventional forms of perspective by which light is rendered<sup>339</sup>. Indeed, I believe he *enjoyed* their differences as slightly different reflective and refracting surfaces, setting up small fields of different vibrations in relationship to each

other, and in that way engaging the viewer to move in and out of the different energy fields – moved by reflection, refraction, oscillation, rapid or slow undulating vibrations. "*Il est le peintre de l'onde aérienne et de la vibration lumineuse, le peintre des affinités et des actions reflexes, le peintre du nuage qui fuit, de la brume qui se dissipe, di rayon que la terre déplace en tournant*" writes Richard Marx<sup>340</sup> in June 1909 of the *Nymphéas*. As a codicil, I would like to add that when I first saw these paintings as a young student, it was this sense of unrestricted variations in the water's surface, each creating a particular space, that most impressed me about them. Many years later, having forgotten this experience, I found myself engaging with a similar spatial folding in my own work.

*Mark-making and light*

[...] When you go out to paint, [he instructed Mrs. Perry] try to forget what objects you have before you, a tree, a house, a field or whatever. merely think, here is a little square of blue, here an oblong of pink, here a streak of yellow, and paint it just as it looks to you, the exact colour and shape, until it gives your naive impression of the scene before you<sup>341</sup>.

Monet's advice to Mrs. Perry supports the episodic nature of his gaze as we find it in the *Nymphéas* and illuminates his methodology. These obliquely constructed planes that demarcate the surface of the water owe much to the marks out of which Monet constructed them. Monet's paintings, Gustave Khan<sup>342</sup> wrote, were elaborations on exact notations. But despite his often energetic and highly articulated, multiple direction of marks, there remains at another level an extremely controlled and purposeful regularity. The *Nymphéas* installation is never stormy, and the steady continuous marks adhere to principles of conventional perspective as they simulate the recession of ripples into the distance at the top edge of the canvas. Another layer of controlled continuous marking is the steady wave of light – always launched from a clean white ground, and particularly true for *Morning* in Room One and for *Clear Morning with Willows* in Room Two. These are more or less horizontally inclined ellipses with a relatively sharp-line treatment, giving the viewer the impression that they are in focus and rest on the surface. However, in painting *The Clouds* in Room One and *Morning with Willows* in Room Two, both occupying the north wall of their respective rooms, Monet changes his focus. Instead of focusing on the *surface* of the water, as on the south wall in

both rooms, he focuses on the *reflection of the clouds* in the water. These are also painted with more diffused and vertically looping gestural marks. The viewer senses this optical displacement – the one gives the sensation of infinitely receding surface while the other a sensation of infinite depth. Monet, one could say, combines the particle with the ether!

In Monet's struggle to capture the infinite extendibility of light, its complex and to some extent mysterious properties, it was necessary for him to break from pictorial illusionism. In order to achieve this, his task was not to submit his marks to a tightly orthodox pictorial *vérité*, but to insist on the dominance of his marks *as drawings* on the canvas. This was a complete reversal of the idea of painting. Bernier points out that there are no convincing spatial relations between objects marked by changes in scale, overlap, focus, tonal variations in colour, or the gradation of colour<sup>343</sup>. It was exactly *the nature of light itself* that he observed, its movement and the very picturing of light traveling in a line, never better articulated than with the sun bursting through the clouds. Monet's verisimilitude rests in his making an equation between the way light strikes objects, re-articulating its event, extending it as a visible line or mark in its movement; it is not the stillness of the photograph – the frozen moment – but light as experience, perception in time. That is Monet's *vérité*. "*The sky here is brilliantly illuminated by the sun which, while hidden behind clouds, sends out thin rivulets of colour between the waving branches of the tree*" Paul Hayes Tucker writes of a painting by Monet – *Effect of Snow, Setting Sun, 1874-75*<sup>344</sup>. And as Charles Stuckey notes:

[...] Monet developed an uncanny ability to render complicated visual phenomena that passed too quickly for the ordinary eye to appreciate in full. In 1909 Roger Marx published a conversation with Monet, who allegedly explained: "*peut-être l'originalité se réduit-elle, chez moi, à la réceptivité d'un organisme suprasensible et à la convenance d'une sténographie qui projette sur la toile, comme sur un écran, l'impression recueillie par la rétine*"<sup>345</sup>.

I want to elaborate somewhat on Monet's ability, his method, in approaching light as an almost scientific experience of time and energy. Each time his brush races over the surface, only small fragments of paint cling to the raised criss-crossing marks, creating a stippled-like shallow stucco surface. The result is that seemingly tiny dots of paint flicker freely everywhere. This has the effect of light shooting in all directions, and these corpuscles of light become real in our imagining of them. The bursts of increasingly lighter contrasts as

they rise progressively or periodic, discontinuous layers or waves of light rising to the surface, give the impression of light rising from within the water's surface on the north and south side. Analogously, our fascination with Monet's *Haystacks* is due, I suspect, to the way light was refracted and reflected off the multi-directional and loosely layered fabric of the hay – on a different scale, but not so unlike the drawn layers of the *Nymphéas* paintings. The open elliptical marks that simulate the ripples on the water's surface of the paintings on the south walls of both Room One and Room Two (fig. 3.62) give the impression of a dance, and this vibrating light with its sense of an internal shining forth further puts into motion these slightly darker and more saturated cerulean sky blue ellipses. Tucker writes: "*In the watery areas, for example, colours are laid one on top of the other to suggest the refractions of the light and the changing hues in the depths of the pond*"<sup>346</sup>.

#### *Mirroring and light*

To say that the water is a mirror is in the case of the *Nymphéas* only partly true. The surface here is, rather, a two-way or partial mirror through which light travels, and depending on the circumstances, permits the viewer to be on both sides – famously Alice in Lewis Carroll's *Alice Through the Looking Glass*. The painting on the east wall – *Two Willows* (fig. 3.63) – beckons us to step through, but here we step through by simply giving over to the sensation of the soft enveloping light, the magic of a London fog<sup>347</sup>, by letting it flow into our psychic field, where we abandon ourselves to being transported by our sensations to the other side, the psychic field within us, which was imagined at the time as luminous point next to luminous point, meaning made possible only through the totality of the field. While Seurat responded literally to this description as *pointilism*, Monet went a very different direction in his articulation of light – and this is the key: light in movement, light in memory, light in duration – *ponderable* matter.

#### *Duration and light*

I would even suggest that to apply to Monet's *Nymphéas* project the term *colour* by itself is misleading. Coloured marks would be a better description, and I feel Bernier is right to draw our attention to Monet's drawing as *not painting*. The camera obscura image was in the nineteenth century frequently referred to as drawn by *the pencil of nature* or drawn by light.

In Monet's lines or marks I read the extended luminous points made up of perceptible physical atoms as seen in time and memory. The memory of a beautiful day is the memory of the duration of time; it is impossible to imagine a split second of light, and memory could not hold it – only a photograph can, and then it is only there as a beginning from which the viewer elaborates. That is what Khan<sup>348</sup> meant when he said Monet takes the detail and then elaborates.

By the time of the *Nymphéas*, Monet does not need any longer to be too concerned with other pictorial conventions in order to convince the viewer of the truth of his experience. It must also be remembered that Monet worked on these paintings over time, for ten years – and, with the urgency of his failing health, for the last three years at every moment available to him. From photographs taken in his studio, these works went through a number of possibilities, adding and subtracting subject matter and canvases. It is known that over this period he changed his original vision, conceived for the Hôtel Biron space and described in the introduction. In the light of the new space at the Orangerie, he must have walked through each room mentally over and over again as the conception of the large works evolved to its present state. He literally surrounded himself in his studio with these works so that he might conceive the logic of their totality. The *Nymphéas* represents a very long-considered project, a project that through time, accumulated experienced, experimentation and Monet's aging process found its own logic.

The surface that Monet constructs through his drawing and scratching and the consequent build up of paint becomes when seen close up – as he would have experienced it – extraordinarily lively in all the layered complexity of its gestural marks, its overlay of dry brush marks over and over again in an infinite echo. "*Ce sont, en un mot, des peintures de reflets mêlés, d'objets réels, mais qui s'harmonisent avec eux dans une diversité aussi merveilleuse que capricieuse*" comments Arène Alexandre<sup>349</sup> as Monet's individual *Nymphéas* paintings arrived at the gallery Durand-Ruel in Paris on the 7<sup>th</sup> of May, 1909 for an exhibition.



*Stretching space:*

[...]When [Monet] began these Water Lily canvases [the single smaller ones] he retained a semblance of the traditional schemas, but he stretched them to almost implausible extremes [...] for example, he looks out across his pond to the foliated shore in the distance. Instead of allowing the pond to recede gradually into space, however, he raised it so radically that its shimmering surface occupies nearly nine-tenths of the canvas, leaving only a small strip of cropped undergrowth at the top of the scene to suggest the bank beyond. Even with the number of lily pad clusters acting as spatial demarcators, it is difficult to gage exactly how far the pond extends before it reaches the bank<sup>350</sup>.

In the *Nymphéas* there is no horizon marked in any of the eight paintings. Nor is there any certain evidence of a shore, apart from the cut-off images of the tree trunks in Room Two and some indication of vegetation on the right and left walls of Room One (fig. 3.64). There are only the lily pads on the water's reflecting and refracting surface to mark an uncertainly tangible ground. Presenting only the lilies on the water, Monet comes ever closer to presenting the immaterial sensation of reality as the energy of light. Tucker writes: "*This must have been a formidable challenge for him, as it meant that colour, and brushwork alone had to bear the weight of description when there was virtually nothing physical to describe. It also meant that he had to devise new strategies to suggest the illusion of the pond's depth*"<sup>351</sup>. The same blue that is used in the marks for the ripples on the pond are also used to makes the layered loopy blue sky that surrounds the variably rosy clouds of both north walls. There is here a contradistinction set between sky and clouds, with the light energy that shines forth from the vaporous clouds in contrast to and absorbed by the cerulean blue of the sky that surrounds them – an effect simultaneously illuminating and absorbing. This is an interesting perceptual strategy – the internal light infused within these paintings moves beyond the surface of the canvas and suffuses the space of the viewer, while the blue absorbs the viewer into the field of the painting. The dark at the edges of the painting, while not without colour, lends an optical effect of neutralized peripheral visual zones, while at the centre of these four paintings the simultaneity of the blue and rose very subtly creates the dynamic space of attraction and repulsion, a pulsating field. The tree trunks, caught against a deeply intense light, stand on the shore in close proximity to the viewer, fixing the viewer at this imaginary place. The complimentary green and blue lines, like rapid undulating

vibrations, expand with wavelike echoes along the edges of the long descending branches and leaves of the weeping willows. The north walls in both rooms are of a slightly cooler, more yellow rose, and the blues are also somewhat cooler, while in comparison the paintings on the south wall have a warmer cast, the blues mixed with warmer slightly violet rose.

In *The Setting Sun*, in Room One (fig. 3.65), this combination of rose and yellow is brought together, creating a space of resolution – a centre – for the viewer. Another point to note is that although Monet painted these as flat canvases, he anticipated the eventual installation and curve of the Orangerie's walls, to which they would be permanently attached, by painting both *Green Reflections* (fig. 3.66) and *Reflections of Trees* (fig. 3.67) darker at the centre so as to draw us in – like reverse beacons – to *accommodate* and stretch the architectural depth and our position within it. It is important to remember that these two paintings act as the conduit ushering us from one room to the other, from evening to morning and back. They are in effect a dark portal through time in which light is *absorbed*, while the remaining walls, lit at the centre, *counteract* the curve's effect by *bending light* towards us.

It is clear that Monet considered his experience of light carefully. He walked through the meadows, marshes, and hills – or sat in a boat on the pond or by the sea. He waited like a hunter to explore light, "*concentrating to capture the precise moment when light shimmered in grass or on silver willows leaves or on the surface on the water.*"<sup>352</sup> He *thought* light – light in all of its possibilities. Even if he had had no scientific knowledge of optics, there is no better teacher than water for light: water is a natural lens, full of prismatic events in every sun-filled burst of spray, full of simultaneity with the world around it, reflecting and absorbing, fracturing, making its own interference patterns in waves. Of light and water he had said: "*I should always like to be in front of it, or on it, and when I die to be buried in a buoy*"<sup>353</sup>. Monet had absorbed light in all its manifestations until thinking light was for him second nature – everything was subservient to it, and even his own emotions at the end of his life only found meaning through it. Monet had watched the passage of light at every moment of the day, and he said that he had stopped painting one canvas after another in order to capture within the paintings the passing of light. The passage of light across the haystacks he recorded "*with such specificity that they collectively form a kind of Chronometer*"<sup>354</sup>. When

he orchestrated the Orangerie's two rooms at Giverny, it would have been unthinkable that he would not have conceptualized both rooms as the experience of a day: this represented the cumulative experience of light in his life as a painter. It presented a unique opportunity to bracket his life at both ends, evening and morning, in a conflation of two energy sources – the energy of his material self – its passage through the world – and the energy of light – its passage through the day. He knew that early morning's light lacked saturated colour – he was accustomed to getting up to paint at four o'clock in the morning – and the blue gray of *Reflection of Trees* (fig. 3.68) denotes this, while the evening light – in *The Setting Sun* (fig. 3.69) – casts a glow that is richly intimate. But all his marks simultaneously carry *immaterial light*, with long strokes as wave energy, and matter or *material light*, with strokes that suggest a corpuscular idea of specific energy.

#### *Monet's cycle of the day's light*

Monet, in having two rooms within which to construct his Cycle, saw an opportunity for presenting the very model of his lifelong interest as a painter, to represent the world through light – primarily as landscape and more particularly his passion for thirty years, the pond at Giverny. If it was therefore crucial to represent light in resonance with his own history, such a project would clearly require planning in a very organized and rational manner, one that included both the choice of subject and the many hours he spent moving the panels back and forth, arranging and rearranging them until he was satisfied with the *narrative* of light that by this time was second nature to him. A cautionary note should be inserted here, that Monet had no intention of literally depicting the entire passage of the day. There would be no point, given that his idea of a narrative was concentrated on how light worked, not how it spun out the day. But even more importantly, Monet did not believe in the concept of a finished or *completed* work – the painting was there to inscribe the viewer into its action: the painting was an event, not a snapshot.

As I have already mentioned (fig. 3.15), Room One represents one event – the light of evening, and Room Two (fig. 3.16) another – the light of morning. I stress *event* because the *Nymphéas* is about light in the process of time, and that always involves a movement: morning and evening *taking place* – on the west side, evening, *The Setting Sun* (fig. 3.70),

and on the east side, morning, *The Two Willows* (fig. 3.71). Pictorially speaking, the quality of light in Room One is more saturated, more haptically enveloping; space closes around the viewer with darker, warmer tones. The Room is tactile, knowable. In Room two there is a sense of opening up, a sense of the unknown or about to be known, in the face of which the presence of the big tree trunks provides a sense of security for the viewer, something to grasp.

I have already extensively spoken about the east wall in Room One, *Green Reflections* (fig. 3.72). Here the light has almost left, and we are seeing the pond at the darkness of dusk with just the water lilies catching the last few rays of light. Backing onto that, in Room Two, I have spoken of the grey blue of dawn, where light is just beginning to touch the day in *Reflection of Trees* (fig. 3.73) on the west side. However I have not spoken at length about the logic of the light on the north and south sides. Room Two has trees along the shore on both north and south walls through whose presence and foliage the viewer looks to the water beyond. In Room One there are only vague tufts of vegetation on both the left and the right side, beyond which is the open water. There is a unity to the north wall and also a unity to the south wall in both Room One and Room Two. On the north wall in Room One *The Clouds* (fig. 3.74A), the viewer is positioned to look through the water's surface at the infinite distance of the reflected inverted clouds, similar to that of a retinal image. Comparing these reflected clouds on the north wall of Room One with those in Room Two *Morning with Willows* (fig. 3.74B), we find that here they are cool with a yellowish cast, while the clouds in Room Two have a warmer rosy cast to them. On the south walls, the focus is shorter and the viewer's attention is directed to the infinite extension of the water's *surface*, which Monet articulates through the wavelets suspended on that surface. Here the warm-cool contrast of the water is reversed: in Room One on the south side, the water has a warm violet cast when compared to the much cooler yellowish cast of the water in Room Two. The viewer entering Room One moves along the north wall with its cool clouds and then through the entrance to Room Two, where we encounter its warmer clouds. Crossing along the east wall of *Two Willows* in Room Two, the viewer now moves towards and along the south wall, from the cool light-bluish-to-rose contrast in Room Two, through the doorway, and back into Room

One – to a warmer contrast of violet-to-rose spread across the water's surface. In the process, the viewer experiences the reflected clouds on the north wall and the water's surface on the south wall at two different times of the day. For Monet, whose entire practice had involved the study of light and times of day, this would have been a defining transformational moment for the viewer.

The sun rises in the north-east over the pond in the Orangerie. Monet makes the play of light more subtle than schematic, but the morning light in this room is clearly centered in the north-east of the room. The setting sun, it therefore follows, sets in the south-west corner of Room One as is the case with *The Setting Sun*. Monet's consistency is telling. Therefore, with the paintings of the north and south walls *Morning* (fig. 3.75) *The Clouds* (fig. 3.76), he takes the opportunity presented by their thematic similarity to represent for the viewer his own love of comparing the same scene at two different moments of time, the most moving aspect of time's passage. Each work in this cycle has fulfilled his project of giving back to the viewer the most complete experience of light, the passage from dawn to dusk.

### 3.3.5 Mathematical beliefs

#### 3.3.5.1. General context

Science, as we have seen, involves the dimension of force, or energy, and the transference of energy through space. As I have discussed, this question of energy links to the optical apparatus and the phenomenon of visual perception, and came to change the understanding of how we experience the world. But the question of energy links not just to optics, but necessarily to the new idea of energy expressed in mathematics. Mathematicians were also rethinking Newton's physics, proposing the idea of space as curved, and relative with respect to the viewer's position. I suggest that these ideas are present in Monet's *Nymphéas* cycle.

I am not sufficiently familiar with mathematical theorems and their expressions not to lean heavily on the explanation of scholars of mathematics, notably of nineteenth century mathematics. It is evident that the nineteenth century was a critical point in the development of contemporary mathematics. This resonates in surprising ways with the ethos of

modernity's material and conceptual ideologies. For example, the spread of the transportation networks – steam powered trains, and eventually the automobile and the invention of electricity – are the result of questions posed about the interconnection and interdependence of energy, force and matter. The concept of energy and its mathematical expression became in the nineteenth century understood through the laws of dynamics<sup>355</sup>, which recorded the interaction of solids, liquids and gaseous bodies as they applied to light, heat, electricity and magnetism. These were treated as different forms of motion, and were recognized as having different manifestations, while significantly still part of the same fundamental energy<sup>356</sup>.

Because the number of mathematicians and all their prolific contributions during this period is vast, I have had to limit myself to principle examples that demonstrate the new understanding consequent on certain mathematical inventions in regards to the *Nymphéas*. Although the best mathematicians of the nineteenth century were not of French origin, as had been in previous centuries since René Descartes (1596-1650), the French Academy of Sciences in Monet's Paris continued to played a major role as a legitimizing agent for mathematics<sup>357</sup>. It should be kept in mind that European mathematicians did not work in isolation – there was a lively correspondence between them that crossed national borders<sup>358</sup>.

To a large extent the nineteenth century was a period of mathematical upheaval due to problems posed by the discovery of the planet Ceres<sup>359</sup> in 1801. This induced questions as to the *self-consistency* of mathematics, challenged Isaac Newton's *edifice of celestial mechanics*, which ideologically consisted of only seven planets, and in a snowball effect led a German mathematician, Carl Friedrich Gauss (1770-1855)<sup>360</sup>, to devise a theoretical mathematical model for calculating the complex orbit of Ceres. The need to account for the new planet demanded a new theoretical rigor to mathematical calculations and systems of analysis. Gauss and other mathematicians were forced to examine all the traditional understandings and beliefs of both algebra<sup>361</sup> and Euclidean ideas of geometry<sup>362</sup>. What followed was the mathematical revision of algebra and geometry – one could say that the revision of one by necessity followed the other<sup>363</sup>.

*Algebra, mathematics and its theoretical and practical application to the nature of physical properties*

Gauss' theory of *algebraic numbers*<sup>364</sup>, opened the door to values of complex algebraic fractions limited previously by whole numbers, and uncovered an entirely new way of reflecting on algebraic equations; it even recast arithmetic's role. In a domino effect, new theories of equations upset systems of algebraic curves and surfaces and literally forced geometry to extend beyond its Euclidean definitions. E.T. Bell writes: "*the very nature of numbers itself [were put] into sharp relief against a firm background of shining new postulates*" which were related to the idea that a complex co-efficient now could have a complex *Nullstelle* – of positive or negative 0 value<sup>365</sup> – one could say a single place with two possibilities. This idea of the relationship of two viewers from two different positions relative to the same point will be discussed with respect to Monet's placement of the viewer in Room Two.

The originality of Gauss' thought dominated not only the theoretical field of mathematics, but other fields within which he applied the new algebra through published works on astronomy, geodesy and crystallography<sup>366</sup>. Algebra now also played an important role in re-working the mathematics of physics – for which the application of both theoretical and pragmatic mathematics was both necessary and useful. Interesting in the context of Monet's *Nymphéas*, and his treatment of the water's surface, is the fact that algebra facilitated the understanding of capillarity or surface tension of liquids as they come into contact in either an elevated or depressed fashion with a solid surface. Mathematics described rationally the tensions, or matter and force, contained in any field. Field theories of electro- or terrestrial magnetism applied mathematics to define the nature of the ether that was considered to be associated with them.

It was Gauss' intention to achieve a mathematical model or representation of the propagation of electric forces. The model for electromagnetism that created the electromagnetic field was arrived at subsequently by John Clerk Maxwell<sup>367</sup> (1831-1879). Maxwell stressed the physical theories of the propagation of ether and the importance of formulating a consistent representation of the mechanism of the field. He derived this

observation from a remark Gauss made on the necessity of finding a *constructible* representation of the propagation of electrical forces.

The nature of the propagation of forces and transfer of energy was a problem on which Wilhelm Weber<sup>368</sup> and Gauss collaborated. Weber agreed with Gauss that the mathematical formalism with which speculations on energy were made should be considered independent of the material physical character and component of the field. This led Weber to commit to the physical base of an electrical ether, and between 1850 and 1860 he evolved a theory which held that force did not move from one particle to another but in fact linked two particles together to form a singular *atom pair*. This demonstrated that *force* was the very embodiment of the relationship between two previously separately existing particles. I suggest that the manner in which Monet constructs a sense of energy between the separate marks and colour relationships in his paintings is in sympathy with Weber's theory.

Herman Helmholtz, on the other hand, argued against any kind of electromagnetism based on a law of central forces such as that which Weber with his electrical view of nature had developed<sup>369</sup>. He argued that electric atom pairs could be formed of like as well as unlike particles – *ordinary matter*, he argued, consisted of negative particles closely bound together, while *ether* was made up of positive pairs that were loosely bound. The oscillation of the electrical ether, Helmholtz explained, led to the propagation of light waves by the transfer of energy. This in turn led to theories of the propagation of force through space<sup>370</sup>. As I will discuss, in the presence of Monet's *Nymphéas* the room appears to be filled with an *ether* of light and matter that emanate from the painting.

Eventually Helmholtz achieved a general formula describing the interaction between electric currents acting instantaneously at a distance, much like Weber's and Maxwell's. This theory of electric and magnetic forces showed that propagation was instantaneous between polarized particles, but not with the velocity of light as in Maxwell's theory. Helmholtz incorporated, therefore, the electromagnetic theory of light within the accepted framework of the electro-dynamic theory, transforming Maxwell's physical theory and in the process also vindicating it<sup>371</sup>. According to P.M. Harman, "*Maxwell recognized that Ludwig Lorenz's*<sup>372</sup> (1829-1891) *theory had formal similarities to his own field theory of electromagnetism and*



*his electromagnetic theory of light. Lorenz maintained that light was a rotational vibration of electricity and envisaged the field as a material plenum subject to vibrations*<sup>373</sup>.

Maxwell and others in the nineteenth century shared the belief that light waves propagate through a material ether, a mechanical medium to support the waves despite the fact that the electromagnetic theory of light could not account for such a medium. Thomas S. Khun writes that the ether and light wave, be it an incorrect theory as is understood today, supported the mechanical paradigm of force that was so dominant at the time<sup>374</sup> and brought a real sense of the ether's material presence with it.

While it was difficult to see an electric field, it was possible with simple means to make visible the forces acting on the magnetic field. Michael Faraday<sup>375</sup> in 1831 proved that the magnetic field in fact produced an electric current, and in 1852 he visually demonstrated – by spreading iron filings on a paper over magnets – the various kinds of force fields created by their attracting and repelling polarities<sup>376</sup> (fig. 3.77).

#### *Non-Euclidean Geometry*

The rigour of Gauss' analysis resulted in a very different geometry from that of Sir Isaac Newton (1642-1727) and the French-Italian mathematician Joseph Louis Lagrange (1736-1813)<sup>377</sup>. For Gauss, the principle question was the application of Euclidean geometry to real physical space as opposed to the abstract axioms of two-dimensional projections that had dominated it<sup>378</sup>. From an early age Gauss had questioned Euclid's geometry and proceeded to complete what he felt Euclid had left only half done. The idea of being able to work geometrically in more than one plane already hails the difference between Euclidean and post Euclidean geometry<sup>379</sup>. Applying algebra to geometric problems, Gauss anticipated a method of calculation that can be said "*does for rotations in space of three dimensions what the algebra of complex numbers does for rotations in a plane*"<sup>380</sup>.

Gauss in the period between 1821-1848 worked extensively on the problems of geodetic surveys, whose complexity could be associated with all curved surfaces. His photographic memory aided him in working out mathematical methods for all curved surfaces, anticipating the mathematics of relativity. While French mathematicians had

already approached this problem, it was Gauss who developed the theory of *differential geometry*<sup>381</sup>, the study of properties of curves and surfaces<sup>382</sup>. As E.T. Bell writes: "*The [...] mystical motion of a "curved" space-time which is a purely mathematical extension of familiar, visualizable curvature to a "space" described by four co-ordinates instead of two, was a natural development of Gauss' work on curved surfaces*"<sup>383</sup>. The two rooms Monet designed for the Nymphéas were *conceived* to be curved, which ran counter to general exhibition practice, and it is important to realize that Monet's design was intended to place the viewer in a particular relationship to the paintings – to construct, I propose, a curved space-time continuum.

It was left to the Russian mathematician Nicolas Ivanovitch Lobatchevsky (1793-1856) and the French mathematician Janos Bolai (1802-1860) to publish a new axiom: that there are possible an infinite set of parallels through P, traditionally understood in painting as the vanishing point. What was of the greatest significance in these conclusions, Morris Klein writes, is the idea that there are geometries different from Euclid's<sup>384</sup>. What this means essentially is not that Euclid's geometry is invalid, but that coming back to Gauss, it is that different geometries can now be applied to measure infinitely large scales, on the one hand, and infinitesimally small scales on the other, and that the differential application of these geometries determines which geometry is more appropriate for measurements of the physical world<sup>385</sup>.

Riemann expanded Euclid's narrow two-dimensional definitions of geometry by stating a new set of geometrical theorems known as Riemann's theorems<sup>386</sup>. These theorems gave mathematicians the ability to interpret information "*on the sphere merely by thinking of the straight lines in the theorems as a great circle on the sphere*"<sup>387</sup>. The significance this held for someone like Monet was in the realization that appearance lay like a permeable disguise over the fundamental structure of things, and that reality was not so much a *thing* as it was a set of interconnections, a network of material *natural* forces.

*Theory of Relativity*

The achievements of nineteenth century non-Euclidean mathematics and the mathematical theories of electromagnetism of light were seminal to the theory of relativity, a theory that resulted from trying to evaluate the force on a particle of charge moving in an electrical field and to calculate its magnetic induction with velocity. The new geometry became useful as a marker in terms of these effects, especially over very long distances such as light years, or today, in measuring subatomic reactions. The *apparently infinite* was becoming so to speak more tangible and less abstract. The popular account is that relativity focuses on the constancy of the speed of light, and mechanical effects as in the contradiction of time and space and the motion and positioning of the body<sup>388</sup>. However, what was dramatic about all of these new mathematical theories was that *scientific law* was understood in quite new and different terms.

It began in 1900 when Max Planck inaugurated quantum theory and Albert Einstein (1879-1955) pioneered the new field. By 1905, Einstein had written his first paper on relativity in the *Annalen der Physik*. In this paper Einstein discussed the concept of light quanta or photons, and by 1917 he gave a paper on the properties of photons. For the purpose at hand, what is important about the theory of relativity is the presence of the observer, whose measurements are used in the framing of its scientific law. In this law, relativity involves distances, either directly or indirectly as in the determination of velocities, accelerations, and forces. It was concluded from this that scientific laws depended on the observer whose measurements are used in the framing of the law<sup>389</sup>.

The discussion of mathematics would not be complete without that area known as statistics. Statistics has infiltrated the sciences and plays an important part in the understanding of the nineteenth century. It began with Descartes<sup>390</sup>, and directly impacted on the study of human activity. It helped to define men and women as social beings and was seminal in deconstructing the deterministic world-view<sup>391</sup>. If determinism asserted that scientific laws are statements of unchanging universal behavior of natural objects, the statistical view – on the other hand – regarded scientific laws simply as statements that were capable of expressing a high degree of probability<sup>392</sup>. Klein writes:

[...] The statistical theorist maintains that the law is merely an observation of a temporary situation, an accidental juxtaposition...Determinism asserts that the present state of nature determines the future unalterably. If I throw a ball into the air it must follow a parabolic path right down to earth again. The statistical view says that not only may it fail in any one case to follow a parabolic law, but [also] it may travel directly to the sun<sup>393</sup>.

Kuhn writes that what makes a paradigm shift acceptable in the context of the nineteenth century, is that it is recognized as an agent of progress. A new paradigm must also resolve, he continues, some outstanding problems and it must preserve a relatively large part of the concrete problem-solving ability that is part of a tradition<sup>394</sup>. The new cosmology of the nineteenth century's developing industrial society represented a shift from the idea of man's natural aspirations to *nature's inherent perfection*, and to the idea of progress defined as the improving and extension through science and technology – ultimately through mathematics, as we have seen – man's *natural aspirations*. This recognized a different set of dynamics beyond the tradition of the Grand Design's mechanistic determination; any such design was now beginning to be understood in the context of *synergy* and its associated interdependence of all the social orders. This view began to slowly extend the idea of force, energy and matter beyond natural phenomena to encompass the social body.

I have restricted this brief introduction on nineteenth century mathematics to what seems relevant to Monet's *Nymphéas* – the concern with *synergy*, the interconnections between force and matter, or we could say *light* (which includes colour) and the *material* of paint. Monet wraps the painting around the viewer to reconnect the part (the viewer) with the whole (the *decoration*, which is to say, the *painting in the presence of the viewer*.) Moreover, in consideration of the demands that Kuhn notes a paradigm shift must counter, Monet strengthens a tradition – painting – in the face of technological innovations such as the new media of film and photography.

### 3.3.5.2 Analysis of pictorial space in the *Nymphéas*

Monet's struggle with what could now be understood as *real* is echoed in Marxist philosophy's struggle against *false consciousness*<sup>395</sup>. The false consciousness of the Age of Enlightenment lay in its aspiration to construct a romanticized representation of the

eighteenth century aristocratic values now adopted by the Bourgeoisie. Yet what mathematics underlines is the shift from the divinely ordained to a secular pragmatic value accessed through the understanding of field theories in which interdependence, or the idea of synergy as Marx recognized, becomes the dominant new model.

The paintings at Giverny are the cumulative reflections of Monet's speculation on the nature of painting. By the time he executed them, Monet had already integrated many aspects of the new relationship between force, matter, time and space. Not unlike Gauss in the field of mathematics, Monet in his field took on – with the help of Boudin – a recalibration of the internal consistency of painting. He reconsidered the direct potential of the raw material of paint – unvarnished and directly from the tube – and in that potential saw that more than one colour, substituting for a single mixed colour, could occupy the same perceptual space<sup>396</sup>. Both blue and yellow, for example, could occupy the space of green when juxtaposed next to each other. Monet also understood that their  $A \times B$  was not necessarily equal to their  $B \times A$  value<sup>397</sup>, but was a relative position in which time as space involved an equivalence. Each condition and each context had its own specificity that was more of an approximation than an absolute condition or value. The methodology of making paintings by choosing the direct method of observation *en plein aire* was always observer-relative. The subject was positioned always directly in front of the painter. This is equally true for both room one and two in the Orangerie where the viewer is always positioned at all points in front of the subject. Like Gauss' interest in geometry's application to real three dimensional lived space, Monet's subject matter is inseparable from his own lived three dimensional world space. It took the form of life in the city, its streets or parks, or the un-romanticized views of the countryside as he observed and experienced them<sup>398</sup>.

Monet's captivation with the raw energy of industrialization, and the recording of modernism's large scale yet transparent buildings of glass and steel, give way in Giverny to the infinitesimal smallness of a vaporous transparency – ether-air and the exponentially monumental scale of the sky, both simultaneously reflected in the pond. This shift of Monet's was not a critique of modernist values, but a very modern celebration of force as

embodied visible energy that can be transferred, stored, interact with and propagate itself through space<sup>399</sup>.

*Embodied visible energy*

In Room One of the Orangerie on the west wall is the two-panel painting titled *The Setting Sun* (fig. 3.17). At first glance this painting appears to record the evening light that illuminates the clouds and foliage of surrounding trees and shrubs, all of which are only reflected on the water of the pond's surface. However, on closer inspection one can observe that Monet also recorded the sub-aquatic plant life that floats below its surface and occasionally marks it with protruding weeds and lily pads. Looking at the water's surface, and looking below into its depth, requires a shift of focal length that can be described as two different moments of looking, a looking on and at the surface *and* a looking through the surface into the depth of the pond. The pond's plane here reflects the rose colour of the setting sun on the moving cloud formation passing overhead. Monet observed and painted looking through the pond's surface, the moving undulating undercurrent of vegetation. The two realities of above and below are superimposed, with each almost replacing the other. The brush strokes are at times apparently circular, and at other times apparently vertical and relatively diagonal. The paint itself is laid down or lifted off with the wooden end of the brush as Monet was constantly adding and subtracting the paint within which the image was embedded. The horizontal and circular marks suggest the water-lily blossoms and pads that establish the surface of the pond on which they are firmly located<sup>400</sup>. In all eight paintings of the Orangerie's two rooms there is a coexistence of two shifting fields of surface and depth. The motion and action of the brushstrokes simulate at least two independent but simultaneously shifting force-fields – clearly two different realities interacting. Paradoxically, these two overlapping focal pictorial fields are interconnected by plants that breaks through the pond's surface, sometimes en masse on the lower left of *The Setting Sun* (fig. 3.78), at times in isolation as in the upper right side of the same painting, or in Room One, with *The Clouds* (fig. 3.79) on the north wall and *Morning* (fig. 3.80) on the south wall. *Green Reflection* (fig. 3.81) on the west wall is primarily articulated with trembling vertical short brushstrokes that are only interrupted with the representation of the horizontal lily pads

painted with quick circular strokes<sup>401</sup>. The colour sequence of the painted layers moves from light to darker to lighter suffusing the field with light that comes from within and above. What Monet achieved is a field of oscillating marks, as James Elkins writes: "*Monet's pictures have no direction: they are perfectly balanced, and marks go in all directions equally*"<sup>402</sup>.

While these *pictures* may go in all directions individually, like the movement of magnetic filings, they are directed – as with magnetism – to give the field a general movement of specific energy<sup>403</sup>. Observe that *Green Reflections* (dark greens and blues) (fig. 3.18) has a subversive stillness of evening: the horizontality of the marks denote the water's surface and vertical marks define depth. Both are held in tension or even, one might say, the impending suspense of night. *The Setting Sun* (fig. 3.17) has more dynamic diagonal and vertical and horizontal movements, day visibly falling away. *The Clouds* (fig. 3.19) on the north wall of Room One, with its central area of circular strokes, shows the wind's impact on the motion of clouds and the ruffled surface of the water fragmenting the absorbed and reflected light. On the opposite south wall, the central area of *Morning* (fig. 3.20) echoes *The Clouds* (fig. 3.19) both in light, colours and the circular open strokes of the water's surface. One can almost feel the wind sweeping across the room from north to south while the right and left sides are more still and dark and vertical. Yet each stroke or mark of paint added or taken away responds to some form of energy transfer generated between Monet and the elements and forces he experienced around him, not just optically but multi-sensorially as well. There are no marks or gestures that are simply straight, curved, vertical, or horizontal. Each mass of paint, thinly or thickly applied, layered or singular, is in a state of motion – becoming.

The title *Morning* (fig. 3.20) may seem to contradict my reading of this room's representations. But I would argue that Room One is the totality of light<sup>404</sup> and energy of the specific moments of *evening becoming evening* as seen in real three-dimensional space. This sense of eternal return can be traced through the pink reflections of *The Clouds* (fig. 3.19) on the north wall, echoed by *Morning* (fig. 3.20) on the south wall, with the arrival of evening or darkness on the east wall and the setting sunset on the west, which is in fact to take us

from our entrance to the room and back, since entrance and exit are the same for this installation.

Room Two, although it also contains four paintings, has on the east wall the largest wrap-around painting – *The Two Willows* (fig. 3.22) – made up of four panels. Not only this painting, but all the paintings of this room are painted with the much less defined individual brushstrokes<sup>405</sup> and scrapes. For example, *The Two Willows* (fig. 3.82) on the east wall consists of softly brushed and thinly applied dry strokes, resulting in a soft and diffused materially vaporous presence. The surface is activated as much by the underlying texture of layers of previously applied paint marks that form a kind of bas relief, and primarily through the shadow cast by its texture the surface is animated as though an underlying current moves its field – a magnetic field that interacts very subtly with the diffused thin watery pools of colour. The physicality of the undercurrent becomes a foil for the paint's surface, which moves out into the space that is occupied by the viewer. The surface energy, lighter than air, lifts up colour fields ranging from blues to oranges and ochres, each colour expanding and flowing or evaporating into the next, and cumulatively wafting out into space<sup>406</sup>. It is the rare representation of the barely visible, almost submerging water lily pads, that give a hint of the presence of a surface and create a momentary sense of vertigo; but it too is temporary, and evaporates on the surface of the pond. Only the curved presence of the willows at both ends keeps the field contained at the sides. The inclining water lily pads that enter the painting at the bottom create a convex sense of space as the cloud formation coming in from the top of the painting move forward out into real space. Greenberg hints at this phenomenon when he wrote:

[...] The last Water Lilies say that a lot of physical space is needed to develop adequately a strong pictorial idea that does not involve an illusion of deep space. The broad, daubed scribbles in which the [late] Water Lilies are executed says that the surface of a painting must breath,[...] that pigment is to be solicited from the surface, not just applied to it<sup>407</sup>.

### *Geometry*

Lobachevskian geometry, or as he called it himself – *imaginary geometry* – showed that more than one – in fact an infinite number of parallel sets of lines – could be drawn in a



plane (curved plane) through a single point (apparent point on the vanishing horizon). He called it the *Absolute Science of Space*<sup>408</sup>. Euclid's working assumptions, that the earth is flat, was also challenged by Einstein, who insisted that a geometry must fit with the curvature of the earth<sup>409</sup>. These new speculations about the geometric organization of space posit multi dimensional, curved surfaces with concave or convex fluid tensions<sup>410</sup>. The idea of more than one geometry with many new geometric possibilities liberated systemic spatially represented expectations.

Significantly, these revolutions in mathematical thinking were widely publicized. The French mathematician, Henri Poincaré (1854-1912), with his preference for thinking in general terms, was an important factor in popularizing the mathematics of the time for a lay public, and his books were widely read<sup>411</sup>. For Monet, then, there were many possible alternatives to traditional perspective. Poincaré, in *Science and Hypothesis*, describes a spatial world that has a right and left, an up and a down, but is entirely dependent on our experience. And Poincaré points out that there is no way of knowing whether the world of our spatial experience corresponds to one geometry or another<sup>412</sup>. Monet was free to make up his own spatial experience: the limited close-cropped framing of the pond makes Poincaré's point, with which Monet also integrated a kind of hyperbolic or geodesic curved space. Monet's installation of the Orangerie's oval rooms with their curved walls, to which the canvases were glued<sup>413</sup>, resonated with contemporary mathematical speculations. Here, Monet created a hybrid of traditional assumptions of perspective created by progressively diminishing size, while the location of each patch of the water lilies' surface structure occupy individual positions (fig. 3.84) rather than a continuous and homogenous or singular flat plane. As David Summers concluded, the space of Monet's paintings respect not traditional perspective but rather the geometry of the activity of light "*as it becomes available to sight in a specific location and moment*"<sup>414</sup>. Each of the eight canvases presented at the Orangerie finds the location of the water's surface subjected not only to a variety of observational varying planes, higher or lower, but also their subjection to the particular curved geometry of the wall's surface. This is true for the viewer who appears to be positioned at the centre of the pond and seeing in the views represented in the paintings around the room only hints of

the shore, as in *Morning* on the south wall. The same holds true for the fictional space of the inverted shore of Room Two, marked by the proximity of the trees that vertically frame three of the four paintings, namely *Morning with Willows* (fig. 3.16) on the north wall, *Clear Morning with Willows* (fig. 3.16) on the south wall, and *The Two Willows* (fig. 3.16) on the east wall. *Reflections of Trees* (fig. 3.16) on the west wall of Room Two has the phantom shape of a tree outlined against the middle of the two-panel painting.

The pictorial space constructed by the paintings that occupy Room two is curved in two ways<sup>415</sup> (fig. 3.83). Apart from the curvature of the walls, the lily pads floating on the surface of the water are introduced into the bottom edge of the canvas near the viewer's feet on a plane sloping upwards, making the bottom two thirds of the canvas appear to be below eye level. This slope *appears to be a curved surface* that could also simultaneously be falling out of the picture plane into the space occupied by the viewer<sup>416</sup>. The viewer's relative space or spatial position has become part of the continuous pictorial space in the representations. Closer to the horizon line of the viewer, the lily pads at the centre of the canvas consistently appear to be receding towards the horizon in the distance. Moreover, the embrace of the curved walls, reinforced by the trees, permit the vaporous reflections to enter the room only in *The Two Willows* (fig. 3.22), while the long willow branches, like a curtain, give presence to an expanding distance behind. *Reflections of Trees* (fig. 3.21) nebulously wafts in a monochrome steely blue, deftly picturing the western morning sky at the first misty light of dawn. The buds on the almost invisible water lily pads are just opening, particularly one at the centre and another near it. Paradoxically, this appears the closest, yet is physically the furthest, point from the viewer, producing an *oscillating experience of concavity and convexity*. If Monet was playing with the antithesis of traditional perspective, the placing of this opening bud could not have been more allegorical. It contradicts the idea of a vanishing point, not out of a disregard for composition, but from an insistence on working through traditional forms with what was known concerning the dialectic engagement of real space with spatial illusion<sup>417</sup>.

Monet employed a number of interesting solutions in order to deal with the superimposition of the water lily scenes with the actual curved space of the rooms. From

installation views of his studio, it can be seen that he simulated the curved space of the future location by placing his otherwise straight panels in a semi-circular fashion<sup>418</sup>. In the studio, the canvases are a mere ten centimeters off the ground and resting on top of the legs of the scaffolding. In the final installation, they are thirty-three centimeters off the ground. The paintings themselves are two meters high, while the room is double or four meters in height. It should come as no surprise that this places the paintings in such a way as to occupy the room's lower half in a position more or less identical to the viewer's position near or on the actual pond at Giverny. The pictorial spatial geometry of the installation is clearly intended to be part of the real space.

Yet Monet, in representing the water lily pads, changes their actual natural configurations. From photographs taken of the pond at the time (fig. 3.84), it is clear that the formation of the lily pads is actually quite circular, with a radiating centre. Monet rarely if ever represents them in this configuration, and prefers to edit their formation so as to create a variety of dynamic lozenge shapes that construct a greater sense of movement through expansion or contraction. While in the photograph they appear to sit very orderly and still on a homogenous surface<sup>419</sup>, in Monet's representations they take on another geometry that mediates, speeds up or slows down the gaze of the viewer as it follows the horizontal curvature of the walls. The geometry of the lily pads accommodates the curve of the wall in a gesture of anamorphic expansion and foreshortening, activating in the viewer a sense of skimming across the surface like a gust of wind. *Green Reflections* (fig. 3.85), in Room Two on the west wall, is a particularly good example of this. In Room One, in the left and right side panels of *The Clouds* (fig. 3.86), on the north wall, and in the right side of *Morning* (fig. 3.87), on the south wall, Monet not only increases the scale of the actual water lily pads, but also configures the direction and angle of the pads so that they appear to be closing in on the viewer. In this way, he succeeds in curving the pictorial space at the centre into the distance by wrapping the sides of the representations around the viewer. The geometry of traditional perspective is consequently reversed: it is as though the viewer is now self-reflectively the point, or pole, of departure from which lines project outward towards the horizon into a

curved field-space – one curved in two directions: curved towards some spherical horizon, and curved around the viewer through the curve of the rooms themselves.

This is the case for the pictorial geometry of *The Clouds* (fig. 3.19) and *Morning* (fig. 3.20) in Room One. A pictorial device that serves a similar purpose can be found on the north and south walls of Room Two in the framing of the paintings by the sheer up-close presence of the tree trunks on both the right and left side of *Morning with Willows* (fig. 3.88), and *Clear Morning with Willows* (fig. 3.89); here, the spacing of the trees curves the pictorial space at the centre of the paintings. While very similar in structure to these paintings, *The Two Willows* (fig. 3.90) – the widest of all the paintings on the east wall of Room Two – employs trees on each side that are thinner and bend outward; in comparison to the sturdier trees of the other paintings, these trees appear further away, while their bending, increasing the distance at the centre, curves the field laterally to an even greater degree. Added to this, a diminishing water lily patch near the eye level of the viewer punctuates the curved field at its perceptually furthest limit, allowing Monet to bend the surface of the pond towards and away from the viewer as part of a continuous sphere. Again, it must be stressed that the water lily pads are an important player in reinforcing the illusion of distance and proximity between one side of the room and the other. Together with the architecturally mandated curve of the paintings in the oval rooms, Monet speeds up or slows down movement through a compressed or stretched geometry applied to the representation of the – circular – water lily pads.

While the water lily pads articulate and confirm the surface of the pond, a very different geometry is introduced by the reflecting clouds and trees from above and the vegetation visible from below. While the water's surface moves up and away from the bottom of the paintings into the distant horizon, the Cloud formation is represented as invading the frame from above against the vertical rise of the vegetation and the dark reflections of the trees from below. Monet marks the piercing of the pond's surface by a partial erasure of the vertical continuity of the plant stems, or at other times he actually records the illusion of displaced verticality that results from the refractive properties of water.

Monet's fascination with the pond resonates with the recognition of all the different energy fields discussed earlier. The amorphous ever-expanding water vapor of clouds that appear to simply touch the surface intermingles with the subterranean vegetation. While apparently incompatible, Monet has them existing on the same plane. He is also sensitive to the tensions of liquids, with their elevated or depressed surfaces and currents. His painterly brushstrokes reconstruct these tensions and animates – even charges – the pond's surfaces with circular and counter currents. Elkin writes that the omni-directional brush marks of Monet, when looked at in a detail, disorientates the viewer in such a way that it becomes hard to know which way is up or down<sup>420</sup>. Monet uses another method as well to play with the viewer's orientation: he dissolves all forms into units of energy, such as verticals acting against horizontals, or – with colour – as component parts of yellow and blue or red, or any other combination. Colours and forms are never fixed, and exist only in a state of becoming and undoing – always requiring a double or a triple looking. One can only ever see a part, or an approximate of the whole, but never both at the same time. It is a looking of probabilities, an oscillation between pluses and minuses in which any pair is capable of producing its own field, apprehended only in the moment; it is instantaneous, it exists with the velocity of light, producing its own ether or mass. The geometry that is formed from above and below as two independent moving, but contingent, planes at any given moment of apprehension is challenged by the compression and expansion of the multi-tiered surface and the embracing walls.

For Monet, light was at the centre of the energy spectrum: the pond reflected it, refracted and focussed it like a mirror – or spread it out like a prism, all the while embedded, as Monet might have thought about it, as an aspect of visible matter that produced its own field and co-existed with other energy fields. This new perception of energy changed traditional social and visual assumptions. Whether it was positive or negative energy that was observed, it was observed in increments, in moments, calibrated to record the moment in observation. Responded to and recorded by the *seismograph* inside man, as Einstein underlined, it was this energy that most fascinated him and held the greatest meaning for him<sup>421</sup>.

The nineteenth century shifted our modeling of the self. From the traditional view of an invisible, idealized and divinely determined perfection inherent in nature, in this view Man's only possibility of extension, a new view took hold, one in which control over a visible and tangible technology offered an extension that more directly reflected our potential energy back to ourselves. *Man, technology and the natural world now occupied the same force field of energy.* Although Monet had previously incorporated the reflections in rivers, ponds and oceans, it was only in the later part of his life, with the accrued knowledge of the immense intellectual changes that had occurred, that he intuitively understood what the pond at Giverny could offer him. Painting the reflections of the pond framed the perfect metaphor of the new interdependent and visible layered reality of co-existing force fields. From Gauss to Einstein there was a search for an internal self-consistency in mathematics, and Monet's *Nymphéas* resonates with that same search in painting. Clement Greenberg writes:

[...] In the end he found what he was looking for, which was not so much a new principle but a more comprehensive one: and it lay not in nature but in the essence of art itself, in its "abstractness." That he himself could not consciously recognize or accept "abstractness" – the qualities of the medium alone – as a principle of consistency makes no difference: it is there, plain to see in the paintings of his old age<sup>422</sup>.

### 3.3.6 Medical beliefs

#### 3.3.6.1 General context

Since perceptual beliefs are situated in the body, and I have analyzed Monet's decorations with respect to perception, it is useful to understand the development of the beliefs about the body that informed the nineteenth century and in Monet's case his approach to the act of painting.

The body becomes publicly anatomized, as can be seen from Rembrandt's 1632 painting, *The Anatomy Lesson of Professor Tulp*<sup>423</sup>, and even further back to mediaeval allegorical painting. What was once a morality lesson in sin or an investigation of mechanics now becomes in the eighteenth century a lesson in the moral and practical responsibility of the citizen. Among *La Specola*'s wax Ex-Voto representations of the body there are also very

complex dioramas in which whole events of bodily catastrophes are reenacted. In one series, *The Triumph of Time* (fig. 3.91), the deaths of women in child-birth and of men from the great pox that overran Europe in the eighteenth century represent the physical afflictions and disfigurements that the pest perpetrated<sup>424</sup>. This curiosity and concern with the state of the body was well illustrated in the encyclopedias of the day<sup>425</sup>.

Ironically, the more intimate facts of the body's functions became known through the constant warfare of the Seven Year War (1756-1763) and Franco-Prussian War (1870-1871)<sup>426</sup>. A crucial aspect of modern warfare was the sheer dimension of human loss and the infliction of horrific wounds<sup>427</sup>, and it was undoubtedly a combination of this loss of productive labour and a growing sensibility toward suffering that fuelled the search for a solution. Amputation was hardly the cure, as complete lack and knowledge of sanitation persisted<sup>428</sup>. The problem that sanitation presented was first solved in 1860 by Joseph Lister (1827-1912), a surgeon who had heard of Pasteur's work on sepsis and fermentation and the idea of micro organisms<sup>429</sup>. The evolution of lenses from the seventeenth through eighteenth century made it possible to become also more intimate with the micro world of nature and its unicellular organisms<sup>430</sup>. As Barbara Stafford writes, the microscope was another tool that amplified nature and leveled the field available to the telescope<sup>431</sup>. The primary cause of infections, Joseph Lister believed, appeared to be organisms that floated in the air and caused infections. The belief that the body was attacked by disease from the outside was not new -- and it had been confirmed by the methods of inoculation discovered by Lady Mary Montague in the early eighteenth century<sup>432</sup>.

With all this as background research, Lister<sup>433</sup> developed a bandage of steam-sterilized gauze impregnated with carbolic acid, already in use on city drains, as an antiseptic curtain. It proved to be, as we know, a great success. Gustav Neuber<sup>434</sup>, an influential German surgeon, found an alternative to the fear of infection. He moved his hospital to the centre of a forest, kept everything and everyone immaculately clean and confirmed in this way that the problem of wound infections was discovered to be not only bacteria in the air, but bacteria on the surgeon's own hands, and that this could be cured by antiseptics. Monet grew up in the context of a vision of the body's survival dependent on a clean environment. The artists of

the Barbizon School, amongst them Diaz Jules Dupré (1811- 89), were attracted to paint outdoors in the clean air of the forest of Fontainebleau. Monet's decision to work on a white background and use clean, no longer tertiary colours as, for example, in Jean Francois Millet's the *The Gleaners* of 1857 was, I suggest, not solely informed by colour theories, but also resonated with this new climate of cleanliness, even sanitization, which also extended into the social fabric.

In the middle of the eighteenth century, the confinement of the insane – discussed by Michel Foucault in *Madness and Civilization*<sup>435</sup> – marked also the beginning of a sanitizing of urban spaces in an effort to construct an uncontaminated image of civil order that heralded the modern state. In this context in 1846 a dentist, Dr. Morton, experimenting with ether, concluded that ether put a person into an unconscious state for minutes at a time, with the great long sought-after effect of rendering them insensitive to pain<sup>436</sup>. But a second more dramatic tumor operation followed, with the interesting side effect that the patient recalled unusually bizarre dreams, while not recalling to memory any pain inflicted by the operations<sup>437</sup>. This represented a contribution to the research into mental states, the conscious and the unconscious, that Freud takes up, and that Monet also calls upon to induce a yet-unrealized vision, the act of seeing for the first time.

With the increasing order imposed on the modern state, the individual's mental state became a matter of state concern. While the obsession with enemas and blood-letting lasted well into the middle of the nineteenth century, the increasing urgency, abetted by new discoveries, to know more about the body and to further resolve clinical problems injected into the medical profession a desire to apply scientific methodology to serious areas of research and to find new ways of coming at the healing of the body. The desire was: "*Not just to tinker on a lot of worn out bodies but to (see the body with new ideas ) make a new world*"<sup>438</sup>.

That desire had its unanticipated antecedents, around the middle of the eighteenth century, in the work of Franz Anton Mesmer (1734-1815) who in 1764 received his medical



degree on the topic *De planetarum influxu in corpus humanum*, or *The influence of Planets on the Human Body*. This was about as far as one can imagine the net could possibly go! But in fact, rather than being directly associated with the dubious claims of astrology, Mesmer's thesis was bound up with the more useful ideas of astronomy and geology, and the discovery of electricity as a new form of energy. Mesmer's hypothesis postulated that mysterious powers, a primaevial ether, poured through limitless space and permeating the entire cosmos, influencing all matter, including human beings. Mesmer's idea of emanation and penetration of energy through space and material bodies gives energy a materiality that resonates with Monet's relationship to the material of paint, charging it at times with aggressive intensity or the lightness of the touch of a feather as he lifts his brush of the canvas. Mesmer gives energy a malleable reality to which one could relate, and for which one could form an image. Mesmer managed, as Barbara Stafford writes,

[...] To single handedly turn the hypnotic trance, autosuggestion, touching rays, and the extramissionist stare into a flourishing medical industry. Magnetic effluvia and sympathetic or antipathetic emanations were the components of modern consciousness, with its imitation of liquidity<sup>439</sup>.

Mesmer's explanation was that the relationship between the magnet and the insensible perspiration of the body was able to pass back and forth through the pores of the skin, making this not a one-way passage, but an exchange between two individuals. This idea also extended to the intimate emotional exchanges that now had a reality outside of mere touching. The popularity of Mesmer's method was not simply an alternative to bleeding and enemas, a one-way affair, but a whole new erotic dimension to looking. It was now looking, not touching, that engendered telepathic rays – which Mesmer introduced as a combination of static electricity and cosmic magnetic power. Magneto-therapy was the application of magnets and electric currents. To quote from Stafford:

[...] For Mesmer, sleep was not a negative condition, but far surpassed mundane wakefulness [...] the clairvoyance and nerve state in which our intellectual faculties are not dormant but most keenly alert [...] And Mesmer arrestingly exposed the late eighteenth century determination to break barriers between the conscious and unconscious faculties, between the senses and the intellect or the body and the soul<sup>440</sup>.

Mesmer's belief in his therapy extended to the ability of inanimate objects to be possessed with the power of exchange. In Paris, a dramatic discovery occurred when the Marquis de Puységur, researching the phenomenon of Mesmerism, sought to examine the effect of mesmerizing young peasants and soldiers as "unspoilt primitive human beings"<sup>441</sup>. In the process he discovered that he had actually hypnotized an involuntary subject, who followed his commands. What had appeared as a supernatural state – sleep-walking was believed to be beyond explanation – could now be artificially induced. As Glasscheib writes, "*the first breakthrough into the transcendental had occurred*"<sup>442</sup>. Medicine now approached a kind of mysticism, in which human physiology was enveloped in an energized and energizing liquid of electricity and magnetism.

[...] All bodies are thus saturated, in their own manner, with the fluid we term electrical [...] an electrical animal machine, the most perfect that exists, because his thoughts, which governs all his actions, can conduct him to infinity..." From Puységur's Memoires<sup>443</sup>;

The philosopher Jean-Paul studied magnetic cures, and postulated on the existence of a will with remote magnetic influence. In 1814 he wrote:

[...] The will is the darkest, most simple, most timeless elementary power of the soul, the spiritual abyss of nature, all conceptions are linked to physical attribute and stipulation; but I find the will that first creates them subject to no specific corporality when I wish to increase it either with desire or negotiation. To elevate itself the will needs nothing external, a true act of creation<sup>444</sup>.

This fundamental idea formed the basis for Arthur Schopenhauer's influential philosophical work, *The World as Will and Idea*, initiating a new philosophical determinism in which he identifies the nature of reality with the will, in the process recasting metaphysics, and even thought itself. For Monet the *will* to capture the fleeting moment – time – under any circumstances, enabled him to finish the *Nymphéas* despite his state of advanced cancer. Not only Schopenhauer, but German literature generally picked up on this phenomenon, one that recast the relationship between what was subject to the senses and what was subject to the mind, initiating a new recognition of impulses that link us to the darker unknown side of the human condition. *Lebenskraft*, or life-force, and *Wahrheit*, Truth, or more exactly, "Authenticity" the new *Weltgeist*, or world spirit the was the core of German Romanticism<sup>445</sup>.

If one pole of the influence generated by Mesmer's experiments led to Romanticism, the other is fixed within the motto of a leading medical journal – *Prove everything, and keep the best*<sup>446</sup>. Knowledge of the body's anatomy exploded with the new emphasis on the pathology of the organs, but a proper understanding of the living state of the body remained obscure so long as it could only be examined externally. The only other option was to cut the living body open. Towards the end of the nineteenth century, in the process of questioning how electricity travels through a vacuum, the German physicist Wilhelm Röntgen (1845-1927) discovered a set of previously unknown ray's capable of passing through material objects, for which reason he called them *X rays*. X rays, it soon turned out, were also able to penetrate the human body, leaving an outline of the skeletal frame exposed onto a photographic negative film<sup>447</sup>. Now one no longer simply had to believe in the penetration of matter by energetic forces this demonstrated and underlined it.

As Mesmer's work had shown, there was much to discover within the brain as to what motivated and influenced human behaviour<sup>448</sup>. Thomas Brown (1778-1820), in his 1820 lectures on *The Philosophy of the Human Mind*, talks about the mind responding to associations, implying an active engagement and mental activity in the mind's functioning, rather than passive reception. He also proposed that it was affectivity, not simply conceptualization and mechanical response, which linked relations in the mind – thereby detaching mental analysis from automatic reference to physiology making phrenology founded by Franz Joseph Gall's organology (1758-1828) and Johann Caspar Spurzheim (1776-1832), one of its first emotive mapping tools<sup>449</sup> which had a transforming influence on psychiatry by bringing it into the social arena<sup>450</sup>. However, a more fully developed analysis and investigation into cerebral functions had to wait for developments in the technology of science. In 1891 James Clerk Maxwell wrote the first fully developed treatise on electricity and magnetism<sup>451</sup>, which – in the context of Charcot and Freud – served to give added legitimacy to Mesmer's earlier work. I'd like to note here Monet's interest in the transference and permeability of energy demonstrated by the subject matter of his paintings – the perception of nature through colour / light, and movement. Consequently, energy in the form of electricity's relationship to the body – in the case for instance of electro-gnostic and

electrotherapy, or the cleansing effect of hydrotherapy – would have had special importance for him. The link with the pond at Giverny is clear.

The single most significant medical development of the nineteenth century and early twentieth century that concerns us here is psychiatry. Mesmer had already suggested that the extension of optics, namely microscopes, telescope and glasses, gave the sensitive patient a new and powerful sense of their own interior. Sigmund Freud's (1856-1939) contributions to the concept of the mind must include mention of Jean-Martin Charcot (1825-1893), the French neurologist and psychiatrist who was interested in the multiform pathological profile of hysteria<sup>452</sup>. As we have seen, he also had investigated the degree to which the diseased nervous system was not only responsive to sight, but to other senses – such as touch – as part of a living chain<sup>453</sup>. Thomas Brown had suggested how this might be attributed:

[...] There is a disposition in men to materialize everything... Thought is considered as analogous to motion in a body; and as bodies put in motion by impulses... we are apt to conclude that the mind is made to think by impressions made upon it, and there must be some kind of contiguity between it and the objects of thought<sup>454</sup>.

In the observation arising from his practice in treating hysteria disturbances with hypnosis, Freud developed his first insights that it was impossible to approach this problem through the anatomical knowledge of the mapped brain or even nerve systems. On the other hand, he remained unconvinced that hysteria was simply an aspect of abnormal fantasies. Freud's distinction between *pure* fantasy and the operations of the mind's *unconscious* narrative ability marks the most contentious and persuasive attempt within the period of Monet's life to understand human experience. If Monet was determined to paint what the retina *saw*, he was also determined to *understand* what it saw; I would argue that Freud's influential presence in the public debates around experience in the world would have encouraged Monet to realize that the task for him as a painter must be to constantly question and learn from the act of seeing, an act not of painting *imaginary* landscapes, nor of painting simply the literal image of a landscape, but of attempting to paint what was *really* there *as the mind unconsciously experienced* it. But Monet was also concerned that what the mind

experienced – and what the painter could *re-present* for others – must somehow respond to a sense of awe in the face of the natural world's vital energy, its *élan vital*, as the saying went at the time, an awe that seems certainly close to the Kantian notion of the Sublime, and an awe that speaks to an intense desire to bond or connect. I would therefore argue that on another level Monet would find a powerful connection with Freud's methodology. For Freud, the psyche – the unconscious – rescued the individual from the memory of traumatic events by erasing them from conscious memory and converting them into psychological characteristics, or the emotional conditions that caused personality changes and afflictions of terror nausea, self-contempt, sexual conflicts and fantasies. These could be entirely contrary to the patient's *normal* state of being, which brought home the point that normality was more extendable than conventionalized behavior would account for<sup>455</sup>.

With this, the theory on the origin of hysterical symptoms was developed, and its cure was called *cathartic therapy* – referring to Aristotle's Greek term for the spiritually liberating effect of tragedies on the spectator<sup>456</sup>. The importance of sexuality had already been anticipated by Schopenhauer, who saw life as ruled by two instincts: firstly, self preservation, which became in much more complex ways Freud's *Ego* – a coherent organization of mental processes of reason and deliberation; and secondly what Freud called the *Id*, associated with passion and the sexual drive<sup>457</sup>, the latter producing the content of consciousness<sup>458</sup>. Freud over time developed a new therapeutic strategy. He no longer hypnotized his patients. Instead, he had them recline on a couch, placing himself out of view so that the patient in full consciousness could tell him everything that came to their mind in the moment. It is easy to see a correlation between this and Monet's own method of seeing and transcribing *in the moment*. Though Monet seems never to have publicly articulated the correlation, nonetheless for each of them it was a process in which it was only over time that the patient – or the viewer (and of course Monet as the first viewer, not unlike the patient on the couch) – would rediscover buried memories – experiences – from deep within the unconscious, for which the pond's reflecting mirror – in Monet's case – could be seen as the perfect receptacle. To explain the unconscious, Freud used a spatial analogy, “a large anti-room in which the various mental excitations are crowding upon one another, like individual beings”, with a

gate keeper that monitors what gets in and out to the surface of consciousness “a *small reception room*”<sup>459</sup>. Freud published his findings in 1901 in *The Interpretation of Dreams*<sup>460</sup>. With Freud’s theory of repressed violence, the dream has become a symptom of civilization—a means by which to diagnose its pathologies – and in the nineteenth century particularly to reconsider man’s relationship to the world, in which the de-phallicizing, or what we might now call deconstruction of phallic power has led to a prolonged renegotiation of sexual relations throughout the twentieth and into the twenty first century. As Leon Bersani, writing on Freud’s theory of violence, puts it:

[...] The conquest, the work of civilization involves a certain removal of a man from nature, an ability to differentiate his own body from other “bodies” in his environment. It involves we might say, a sharpening of the boundaries between the ego and the world, a willingness to forego the enjoyment of the “oceanic feeling” which we are beginning to see, may conceal under benign “sensations of eternity” a considerable amount of destructive aggression towards the world<sup>461</sup>.

Monet’s subject matter – the pond with its reflecting surface and its deep murky complex vegetative interior – was the perfect metaphor for the human psyche. In moments of frustration with his inability to make the painting work as he wished, Monet exerted a certain amount of violent aggression towards it, slashing at the fabric of the canvas as though wanting to open it up, leaving evidence on their surfaces.

It has been said that the modern world began with Descartes, that *cogito ergo sum* summed up for the following centuries the imperative that the autonomous authenticity of the self defined Man’s identity. As a consequence, the eighteenth and nineteenth centuries remained hostile to the complexity of an identity whose definition escaped the individual. But this was the very core of Freud’s research: a *layered* reality that the anthropological speculation, the deep search, of psychoanalysis attempted to rescue from the individuation of the *part* – man – from nature, and somehow make that nature *whole* again.

### 3.3.6.2 Analysis of pictorial space in the *Nymphéas*

Monet’s vision inevitably looked very different from the precisely articulated anatomical samples that by tradition paradoxically still clung to the polarities of the Cartesian world-

view. That view in its materialist formation rendered things graspable, simple and knowable, a view now threatened by psychoanalysis and the dawn of a new world view in which the interaction of the body and mind represented an inseparable entity.

Monet's perspective is embedded in the complex materiality of biological thought whose materialism began to merge with *vitalism* and the properties of light, a world of waves and corpuscles, of inconsistent behavior in matter that also engendered contradiction of thought. Stafford writes that the Cartesian legacy was blind to this: "*The practice of thought is inconsistent with the practice of vision precisely in the elusive capacity to move, adjust, and change register*"<sup>462</sup>. As a consequence of this elusive capacity, the emotive gaze – Monet's gaze – gained greater complexity<sup>463</sup>. Monet writes to his friend Gustav Geffroy while on a painting trip: "*I am disgusted by easy things that come in one go*"<sup>464</sup>. For Monet this disgust was resolved through struggle: his struggle with the manipulation of the *materiality* of paint, and the struggle to assemble the energy of those gestures within which he sought to fix an event – the fleeting *immateriality* of colour and light – that held fast the emotive sensations of his feelings. Struggle indeed, since principal among those feelings was his deep sense of inadequacy in attempting to fix his perceptions. Greenberg writes: "*There was a kind of force in him[...]unable to stop when once at work[...]and [he] thrust himself[...]to his literal honesty[...]to his own sensations rather than to nature*"<sup>465</sup>. Monet himself, writing to Durand-Ruel, expressed his desire to immortalize his feeling as a response in that "*These landscapes of water and reflections have become an obsession. It's quite beyond my powers at my age, and yet I want to succeed in expressing what I feel*"<sup>466</sup>.

#### *Room One*

If one were with Monet in Giverny, the viewer in Room One would be located on the "camembert", that odd circular platform in the middle of the pond<sup>467</sup>. But the viewer is not at Giverny. Monet has placed us here, in the Orangerie, and our gaze is directed therefore *not only out* from a mental *prospect*, but *also in and through* the material interiority of the body, where the body apprehends the world. Here the perception of space appears like a lens, an arc of projection that works both ways, constantly moving out into the world and back into the body. If by the nineteenth century the body's interior had been anatomized, purged,

cleaned and sterilized – sanitized even – here in Room One there is articulated nevertheless the lingering ambivalence that Gaston Bachelard describes: “*Space, but you cannot even conceive the horrible inside-outside that real space is*”<sup>468</sup>. Consider on the north wall *The Clouds* (fig. 3.92, 3.93) and on the south wall *Morning* (fig. 3.94, 3.95). At the edges of these paintings the density of thick vegetation both above and below the surface of the pond envelopes us in the darkness of Nature's primaeval incoherence, while at the centre of both paintings Monet's strong light pulls us back into the clear clean air of the familiar – the ordered world of modernity<sup>469</sup>. On the west wall, where an even greater saturation of plant life rises up from the depths to touch the surface of the water in *The Setting Sun*, the rosy blush of the reflected sunlight wrenches us free of the entangling vegetation in a moment of real and reflected restraint. *Green Reflection* on the east wall, in a similar vein, although incredibly dark and dense, deflects the glow of the evening light as it catches the water lilies on the surface of the pond. *Green Reflection*, the transition to the second room, offers the perfect fusion of the underlying mystery of the new physio-psychic complexity of the linked body and mind. Allegorically speaking, in this room the weight of the body's corporeal mortality is leavened by the lightness of the mind's projection, just as the illumination of the evening light anticipates the brightness of the day. Monet, responding to the newly recognized complexity of the Self's identity, instead of forsaking the body, integrates it into the imagination.

The water plays a significant role in these paintings. Pictorially, the surface of the pond in *Morning* (fig. 3.96) frames the large open expanse through the diagonal organization of the vegetation. These diagonals, and the more clearly defined rivulets of water and outlines of plant life at the bottom front edge of the canvas, become less defined towards the top edge of the canvas, and might normally give the impression of moving away from the viewer. However, the thicket of vegetation on both sides, overhanging and reflected in the surface of the pond, directs the flow of the water's surface towards the viewer and into the space of the room. Similarly, but spatially less overtly, the reflected depth of the sky in *The Clouds* (fig. 3.97), whose images float at the centre of the canvas, is hemmed in on both sides by encroaching shadows, giving the viewer the sensation of falling into limitless depth, a



sensation even of the room in which one is standing giving away under one's feet – an impression of incredible vertigo. In the same manner, in *The Setting Sun* (fig. 3.98) the sensation of flowing molten energy in the depicted light on the west wall bursts over the edge of the canvas and into the viewer's space like a glowing lava flow. On the opposite east wall, the green blue densely vegetative swampy water at the centre of *Green Reflections* pulls the viewer into its furthest reaches, a looming grasp arrested by the reassuringly islands of water lilies whose flowers seem close enough to touch, guiding the flow of the water towards the centre of the room by framing the central dark area with their diagonally streamed lightness, bobbing on the surface like a life raft.

Every painting spills over and into the space of the viewer – pictorially but also laden with emotional energy –modulating the physical experience the viewer has of the actual room. This spilling forth is so typical of Monet's emotional life, filled as it was on a daily basis with confessions of euphoria and despair in his letters to Alice on his travels abroad<sup>470</sup>. Monet was unafraid to live the rollercoaster of his feelings, not in order to understand them, but rather to allow them into his painting. In Room One there is the sense of a sweet bitter conflict ending the day with a glorious sunset – the artist at the end of his life, and the last painting one sees as one leaves to enter the second room. Everything about its representation is conflicted: the marks of the vegetation go in every direction, a last desperate burst to bear witness to the glory of sheer existence in this, his last work, the *Nymphéas*.

It has been remarked that there is in these works no horizon. This absence is in itself a microcosmic containment for the emotionally conflicted sensations, pictorially explicit but also implicit in the shifting spatial play between the paintings. At this point Monet's future has contracted to the surface of the water<sup>471</sup>. These paintings, in all their spatial complexity, limit the event to a single field; all conventional ideas of spatial horizon have been cropped to permit the body to experience, without inhibition, all the possibilities by which the human body might locate itself in space itself – moving out or moving in, a sense of height, depth and surface, a falling and a sinking, or standing in or even on a surface. Each one is indexed not just to the physical sensations of the body, but to the psychological and psychic responses that these induce. The experience of the *Nymphéas* goes well beyond the surface of the

painting; the viewer's sense of place – the place we occupy in this room – is enlarged beyond the mere physical experience. Karen Wilkin considers the collapsing space of these paintings:

[...]Monet makes the surface of the pond congruent with the surface of the canvas, collapsing space and blurring distinctions between inverted reflections, lily pads, and blossoms and dislocates the beholder, forever changing assumptions how landscape can be presented<sup>472</sup>.

Wilkin is thinking in terms of formal presentation, but I would argue as well for the principle in terms of an experience that engages – not unlike Mesmer's idea of an exchange between two realities – the space of the viewer with the pictorial space as a new physio-psychic space shared by both. With the waters' surface directed to move into the space, everything becomes liquid, fluid. The disappearance of the horizon in the inversion and merging of air and water challenges the separateness of the one to the other, of the mind to the body, and reflects an oceanic consciousness typical of the period's sense of a new order that was to be more perceptually advanced than its predecessor.

Pain is inevitably the prerequisite for the ascent into some more intense form of reality. The intensity of the modernist project took its toll in an accentuated physical and emotional reality<sup>473</sup>. Robert Gordon writes: "*Monet's dream [was] of a completely integrated environment in which the paintings' and the viewers' space interlocked*"<sup>474</sup>. The viewer is at times standing above the waters surface, looking down – in *Morning* – hovering or descending – in *The Clouds* – getting ones feet wet – in *The Setting Sun* – and wading into the *Green Reflections*, the darkest painting – Monet's bottomless pit of doubt. Virginia Spate writes on *Green Reflections*: "*The white water-lilies, the grey-green, blue-green elliptical leaves detach themselves from the dark vertical streaks which suggest reflections penetrating ever deeper into the unseeable depth of the pool*"<sup>475</sup>. One thinks of that point at which one goes to sleep, at which dusk turns to night, or dawn turns to day, consciousness sleeps – leaving the unconscious (we can only give a name), the *dream-state*. The dream- state is never at rest, and Monet – aware of his own emotional turmoil – ensures that we, the viewer, share that turmoil, enter into the paintings' progress. Let me repeat the quote here from the

philosopher Jean-Paul: [the will] "*is the darkest most simple timeless elementary power of the soul, the spiritual abyss of nature*"<sup>476</sup>.

Monet consciously orchestrated the horizontal connections between all four paintings of this room. The paintings on the west, north and south wall connect horizontally through their dark vertical edges. This has an "on / off" effect of light / dark, light / dark, light / dark. *Green Reflections* (fig. 3.99), on the other hand, is inverse, the lightest areas are on its vertical edges and the darkest areas at its centre. This has the effect of drawing the viewer towards its immeasurable depth into the next room, just as the pulsing of the on /off switching of light energy on the other walls keeps the circular space pulsating with energy. Everything, Joachim Pissarro wrote on visiting a major show by Monet in Chicago, is in movement:

[...] Monet always seemed to be on the move, and as one passes from one room of the exhibition to the other, it seems that everything around him was on the move also, in a state of permanent tremor, prompting his hand, his eye, his whole body and his mind to respond with speed in order to capture this frenetic synergy<sup>477</sup>.

In Room One everything flows in-out, down-up and through, like our own blood circulating through the body. There are no cut-off limbs! All the paintings are connected. The constant flow of the liquidity of Mesmer's electro-magnetic energy envelopes and constantly penetrates the viewer's body and psychic reality, represented or real: an exchange of energy takes place between the viewer and the painted event. Monet himself loved the speed of motor-cars – he owned several himself, though he hired a driver rather than drive himself, which suggests that the experience of speed was exciting but also overwhelming to his senses. Pissarro continues:

[...] Yet his paintings almost never fall apart or disintegrate into mere chaos: an equilibrium dominates the organization in most of his œuvre: in virtually every work he created, the spatial mobility enacted there finds a counterpoint in an underlying structure. More and more subtle with time, as demonstrated by the *Nymphéas* and the *Weeping Willows* in particular<sup>478</sup>.

Pictorial space is also a matter of the material articulation of paint on the canvas. Monet builds up the body of both the image and the painterly surface with layers of marks. The viewer must re-imagine, like the lines or tenuous vague forms underlying the surface of the

body visible in X Rays – images that illuminate the body from the inside. Monet understood the necessity of layering his surfaces and marks – the one mark forming the background to the next in order to slowly build up the body of the painting with a materiality of colour that radiated light. His fast repetitive and volatile way of drawing with complex varied lines that could become thin or thick, wide or narrow, split, scraped, feathered and round, straight, oblique, crooked – infinitely varied – are not about an accurate photogenic reading of form or of light, but are instead concerned with a convincing simulation of emotive energy and its accompanying sensation of coalescence. “*This satanic painting tortures me [...] I do nothing but scrape and slash*”<sup>479</sup>. Here we have Monet at war with himself, attempting to simulate, to reenact the speed, deflection, and impact of energy to light to energy – the very definition of his concept of form. The drawings are less about capturing *actual* – that is to say our conventionalized idea of depictive form – than drawing how light, in his imagination, constructs them – gestures producing light energy. No mark is fixed; all marks are mobile as they sink and rise from the depth to the surface, bouncing off each other – at once material and immaterial. This is Monet’s way of keeping everything fresh, individually clean, aired through and healthy. The horror of melancholia that Monet fends off through the absence of black in his pallet, is also part of his desire to keep the body alive as long as possible by tapping and listening, keeping it clean with primary colours or individually mixed separate marks of colour on a white surface. Monet’s marks scintillate and seduce at every instance. Their visual mixing fulfills the desire of Eros, and its repetition over and over again marks the urgency of this need. When Monet took over the painter Ribot’s studio, the first thing he did was to tear off the black papers on the widows that Ribot had used in order to obtain the effect of trap-door lighting<sup>480</sup>.

Monet experiments, each painting offering up another opportunity to get closer to capturing the emotive sympathetic and antipathetic emanations of consciousness. With his own unspoiled marks of primary experience, Monet *hypnotized* himself into Nature through the unconscious of his own body. Monet was not painting what he saw, but how he experienced what he saw through the screen of his feelings – their memory, that pierces

through consciousness's own system in the phenomenon of becoming. Kevin Newmark, writing on Freud's remarks on the value of memory, writes:

[...] Memory as the site where change can be produced, where traces can be left [...] As such, memory also would be the place where the wholly unexpected and accidental can now happen to the subject, making it into something different than it previously was<sup>481</sup>.

No painting gets exactly the same treatment of marks. Each has a dominant vocabulary. Each kind of mark a unique organ, contributing to the organism as a whole its *Lebenskraft* and its *Weltgeist*. *The Clouds* (fig. 3.100) has vertical loopy marks that softly let the viewer falling into depth; *Morning* (fig. 3.101) – horizontal, elliptical, open marks that skid on the surface. *The Setting Sun* (fig. 3.102) is a conflicted group of horizontal, vertical, and diagonal marks that push the burning lava flow of light into the space, and – finally – vertical, closely overlapping, dense, secretive, similarly-sized strokes that dominate the horizontal loopy gestures and colour masses of the lily pads in this painting. Monet, in his response to each feeling elicited from the scene, elicited from the *memory of the feeling* what he wanted to portray, permitted him to *prove every possibility* to keep the best, as he erased by scraping, repainting, redrawing. This was Monet's real and symbolic expression of order and rationality, the accuracy of his emotional truth now eroticized.

In Room One it is possible to find Monet himself, Monet's unconscious, the body holding the secrets of the conscious mind captive. On the right hand side of the south wall, in *The Clouds*, a fugitive self-portrait of Monet emerges from the reflection of the clouds in the water, the eyes marking the horizon between heaven and earth – inadvertently exactly where his own eyes would have met the installed canvas. There is an extraordinary silence to this presence, so like the figures that one sees in the clouds that pass us by in silence. This pseudo accidental – inadvertent (but is it inadvertent?) portrait of the artist reminds the viewer of the expanding and disappearing quality of clouds, of Nature itself, whose depth is also always becoming an expanse. Henry Vidal, Parisian born painter and architect, visited Monet's house after he had died. A touching detail caught his eye – “*there on a table in his studio lay the last books the painter had thumbed through [...] a book of poems by Baudelaire was opened to 'The Stranger'*”:

Tell me enigmatical man, whom do you love best, your father, your mother, your sister,  
 or your brother?  
 Your Friends?  
 Now you use a word whose meaning I have  
 never known.  
 (...)  
 Then what do you love, extraordinary stranger?  
 I love clouds,...the clouds that pass...up  
 there...the wonderful clouds<sup>482</sup>!

### *Room Two*

Even Descartes realized that a dream needs a belief. To which Schopenhauer would have added Will. Despite the unconsciousness of the unconscious moment, it must be bracketed by the belief in one's own perceptions, perceptions that alone can *will* Room Two to become real.

Here in Room Two the mind imagines oneself looking from the shore back towards the pond – the mind that for Descartes constructs out of three lines a triangle, for Monet constructs the pond<sup>483</sup>. However – as we have proposed – unlike Descartes, Monet does not separate body from mind, but demonstrates a synergetic relationship between Room One and Two by backing and pairing dusk with dawn. This is the transition through the dream to the real. From dusk – the dark materially heavy and viscous *Green Reflections* of Monet's bottomless pit of doubt we leave behind in Room One – we enter into the amorphous edge between sleep and wakefulness – the unconscious on the verge of the consciousness – that place Freud called the *anti-chamber* and Monet in the *Nymphéas* paints as the space into which we expand. *Reflection of Trees* is the waking of dawn *willed* into day, the unconscious *willed* into consciousness.

Monet's own perceptual experience of Dawn occurred many years before when he began to understand the relationship in painting of light to weather, atmosphere, and time. "It was as if a veil was torn from my eyes and I understood what painting could be"<sup>484</sup>. The dream is silent, and the waking is slow and deliberate. Monet's clear intention was to make these two paintings – *Green Reflections* and *Reflection of Trees* – portals to one another, back to back, identical in width and connecting each one to the other – a transition in time.

*Reflections of Trees* (fig. 3.103) on the west wall of Room Two is dreamlike and amorphous. The single weeping willow barely visible in its reflection at the centre of the painting is cut off from visibly standing on the shore of the pond – it appears to be just emerging in the act of becoming *real*. Most of the water-lily blossoms are still closed from the night, though two are barely open at the painting's centre. Several blossoms to the left and two near the right hand bottom edge of the painting are still in sleep. The monochrome blue-grey colouring makes this painting sleepily hypnotic, putting the viewer in a trance – a state between wakefulness and dream, *eyes wide shut*. There appears to be an uneasy immaterial depth, just a shallow field of descending simultaneous vertical and barely differentiated marks that fall in long slow, soft curves across or within the water's surface, the reflection of an emerging tree at centre – the dreamer's phantom presence.

The other three paintings in this room – *Morning with Willows* (fig. 3.23) on the north wall, *Clear Morning with Willows* (fig. 3.24) on the south wall, *The Two Willows* (fig. 3.22) on the east wall – include two willows that loosely act as frames to the otherwise expansive centre. In an earlier version of these paintings, three willows formed a triad against the expansive surface of the pond. Monet decided to eliminate the central willow. Gordon writes:

[...] much of the repainting is directed towards an opening-out of the spaces [in this room] ...the paintings become attenuated, purged of detail, as if an oceanic emptiness was declaring itself more and more radical terms...stretching the empty expanse of the pond between flanking willow trunks [...] it was an unprecedented experiment he was involved in<sup>485</sup>.

On the north wall, *Morning with Willows* (fig. 3.24) marks a transition from the dark of *Reflection of Trees* (fig. 3.21) on the west wall. Facing *Reflection of Trees*, the right side of this painting is darkest, and it connects with the dark vertical left edge of *Morning with Willows* (fig. 3.104) on the north side. Monet obviously intended to give the appearance of horizontal continuity and transition. It is this painting that we face when entering from the right. *Morning with Willows* is also generally darker along the bottom edge than the painting on the opposite south side, *Clear Morning with Willows* (fig. 3.105). Here the rising sun on the reflected clouds illuminates the water's surface more evenly, and its bottom edge is

consequently lighter. In Room Two, willows come in twos, the *id* and the *ego* – that which gives over and that which wills, each always in the shadow of the other's presence – two on the north wall, two on the south wall and two on the east wall. At the top, their trunks end above the lowest branches of the trees and at the bottom of the painting the frame of reference cuts off before the ground, making their footing uncertain – like the wounded and impotent soldier, he confessed to Clemenceau, as the war raged around him in Europe. Monet insists that we, the viewer, must through our own imagination complete them. The view of their totality is eliminated, their roots and their crown cut off from sight, and the viewer in this sense is placed out of sight of the 'patient', like Freud set to listen, to engage all that these paintings present. It is only then that Monet and the viewer become one.

In Room Two, the willows are omnipresent, with their heavy trunks and dark branches fencing off both sides. They direct the viewer towards the central opening in the paintings, as though guiding us through a passage towards the light. That light achieves its greatest luminosity in *The Two Willow* (fig. 3.106) on the final east wall, whose two curved trees with their fluidly embracing curved delicacy construct the opening of a birthing, the anticipation of a new day, and a brighter world. John House writes: "*Monet was engaged in an overarching project, namely, to represent origins – nature and natural desires, immediate experience, a self*" that could have no end, only repetition; and he quotes Monet: "*I tell myself that anyone who says he has finished a canvas is terribly arrogant. Finished means complete, perfect*"<sup>486</sup>.

The branches of the willows – seen against the morning light, they take on a still darker appearance – are nonetheless surprisingly thick, dark and hang heavily. This is so different from what Lucien Descaves, the novelist, experienced on visiting Monet at Giverny:

[...] Monet also planted the weeping willows, and here they stand as living contradictions to the connotations of mourning imputed to them: when I saw them again the other day, bathed in sunlight, the willows of Giverny were smiling over the mirroring water<sup>487</sup>.

In Room Two, these willows are not *smiling*. They are heavy and intense, with slightly lighter valued complementary coloured marks echoing the shapes of the falling, curving leaves along their narrow leafy edges. The assertive presence of the stout solid heavy trunks



on both the north and south side are like Monet himself, as he must have stood a thousand times along the shores of this pond. The Duc du Trévis describes Monet's posture:

[...] his way of throwing back his head and chest with his arms at the ready while his feet remain solidly on the floor, this tough stance serves to remind us that painters are great fighters who size up the strength of their adversary who remains invisible to the ordinary person: nature<sup>488</sup>.

The trunks' impressive mass offers a contradiction to the outwardly expanding, vaporized field where the collusion of water and sky merges not *beyond* the horizon but *without* and *within* it. The consistency of an overall fusion of blues and the rosy embrace of dawn constructs a "*melting single monochrome plane [that evokes] an inexhaustible field of all-encompassing space*"<sup>489</sup>. Instead of the liquidity and shifting movement under the viewer's feet as in Room One, a vague solidity hovers below. The curtain or veil of the willow branches, on both the north and south side, give only a promise of the expanding field of rose and blue sky, and a reflection that appears to move away from the viewer. This has quite the opposite effect to the inundation of Room One.

The east and final wall is the largest curved wall surface, and *Two Willows* (fig. 3.107) is the longest painting. The two willows on each side are relatively young, and pliant. Their trunks, like the branches, have echoes of intense blue wave-like outwardly rippling marks that give the feeling of vibration – vibrating with and into the field. Here only a few branches descend into the otherwise wide-open, expansive pictorial field of softly feathered blues and shades of rose. Everything is understated, a shimmering stillness of soft round marks overlapping on an undecipherable neutrally coloured field. Everything here speaks of a beginning. Along all three walls – north, south, and primarily here on the east, the bottoms of the paintings are edged with lily pads. There are as well some smaller lily pads, vaguely visible in the distance, along the top edges of the canvases, and the dark tree trunks in intermittent pairs set up a rhythm of dark and light that opens up, by contrast with the smaller more fragile trees, into an expanse of immense lightness.

It is here at each instance of each mark, "*not reasoned but felt, each one as important as the other*"<sup>490</sup>, that the eye re-embodies, retraces with internalized motion and emotion again and again, the pulsing totality of the field. The marks are always open or somehow

incomplete, giving access to the imagination of becoming. It is the absorption of the living, moving, always shifting vibrations of matter that defies any scale and is always liquid which here acts as a carrier of the transliteration of feeling that has a psychic weight, a density as fleeting light and colour and material instance.

Monet took on a virtually impossible task – the paradox of his time – in attempting to visualize the simultaneity of the material and immaterial, body and mind. The atom, with its new and complex internal structure and potential energy as both matter and anti matter, becomes a touch that moves through the body, transforming it by releasing and coalescing. The *haptic* suspended by the gesture of the marks, always open, never finished always becoming, releasing Monet's natural energy of feeling into this room. Paul Valéry, an acquaintance of Monet, wrote "*I note that our senses provide us with only a bare minimum of hints, which transpose into forms of sensibility only an infinitesimal part of the probable variety and variations of a "world" we can neither conceive nor imagine*"<sup>491</sup>.

But nevertheless Monet made a serious attempt at it, and the release of energy that constructs these two rooms has the psychic depth of the man who conceived the installation. That depth had an undertow. From the letters that he wrote to his wife Alice, we know that Monet suffered depression, and that he was neurotically emotional, with apparent periods of desperate agony during which he was deeply convinced of his own failure and sterility. In moments like that he could see nothing but black<sup>492</sup>. As I mentioned, Monet could not tolerate black in his pallet.

Monet's persona has been examined by Steven Levine<sup>493</sup>, particularly as it can be reconstructed in the *Nymphéas* project from the point of view of Narcissus and self reflection. Levine's research traced Monet's personal comments, as well as remarks made by his contemporaries in connection with the preoccupation with water and its reflective characteristics. There is an endless repetition of the deep oceanic feeling associated with the womb, as Levine notes, in the repeated, even obsessive painting of water – his central subject matter. Another reading of Monet applies the concept of pre-Oedipal infancy, in which – for reasons unknown – the object-relation with the mother is damaged, causing aggression towards the damaged maternal figure through infantile paranoid fantasies. A third possibility

is Lacan's interpretation<sup>494</sup>, in which Monet situates himself in a non-objective and self-annihilating discourse of endless flux for which the buoy metaphor – Monet's desire to have his ashes enclosed in a buoy to bob with the rhythm of the ocean up and down for eternity – is a perfect and revealing vehicle. One could say from the many letters that he left behind that his emotional life was as unpredictable, the moods veering from ecstasy to depression depending on the success of his working moment.

After the death of his second wife, Monet turns to the reflecting pool, whose reflection is the ego reflecting the other's identity back as self. This self in later years is the Monet who suffers the Nirvana complex of endless repetition, a symbolic annihilation of all his erotic investments within himself. Once the ego is outside of the self, represented to us, it is in the Lacanian sense only then that we recognize – or rather, mis-recognize ourselves as a complete entity. What happens when we see that ultimately nothing is there but a reflection? The eye is incapable of more than the gaze, and beyond that – nothing. Levine writes that the imaginary and symbolic disappears and the fatal face of the Real – or as Schopenhauer suggested, Death as the Real to life – is the only presence. It is, then, the eroticization of the gaze that provides the key that feeds the desire, touching and caressing, and by necessity becomes that which fills in the blank. I would propose that Monet judged his paintings by their ability to hail or solicit this Eros that could feed and secure him. In the absence of a successful painting, or in the presence of one which he considered a failed attempt, Monet would slash at the canvas, or attack it violently with his brush, laying down paint and scraping it off, until it would yield to his will, give him what he wanted. "*The gestures tell the story of a certain dissatisfaction, itchy, chafing, [...] a hand that is impatient and deliberately out of control*"<sup>495</sup>. All nuances of emotions are indexed by the act of making – acts of repressed or released desires. At times like this Monet felt despair, abandonment, the loss of the nourishing and attentive comfort of the mother's unconditional love. Women are often identified with flowers, and Monet loved both – only in their presence did he feel himself completely. The repressed scatological impulse to make ever bigger and encompassing *paintings*, to create for the mother, to *recreate* the mother that looms bigger than he, the place of obscure refuge an aggrandized idealized womb – the buoy ever-lastingly

bobbing on the water – Monet knew it all along! For Monet, to render a work of art is to make the void sufferable, and for him he opened a crack in the masculine model of self-reflection, unable to any longer resist or be impermeable to his own other, the feminine, as he opened his body in its totality to the world<sup>496</sup>.

And what, apart from the (white) water-lily, is evoked by the name *Nymphéas*? As a postscript to this section, I quote a definition of its derivation – *nymph* –from a standard source:

1. Any of numerous female natural spirits, inhabiting and animistically representing features of nature.
  2. *Poetic*. A beautiful woman.
  3. *Entomology*. One of the young of any insect that undergoes incomplete metamorphosis. Also called "nympha."
- Compare **pupa**. From Latin *nympha*, from Greek *numphe*, nymph, bride<sup>497</sup>.

## CONCLUSION

### **Beliefs and the body's presence: redefining the artist and the viewer**

When I chose to explore the subject of this thesis – the investigation of pictorial space in relationship to cognitive and belief structures, a *multilevel* spatial analysis, – I did not anticipate how the impact of perceptual and conceptual beliefs on pictorial representations would reconfigure for me the way I thought not only about the *producer* of representations, but also the *viewer* who perceives and navigates them. I had given some thought to knowing and believing, but I did not yet associate beliefs with a producing agent's *intentional stance* or beliefs as a receiving agent's *intentional system*<sup>1</sup> – that both the artist and the viewer are agents of beliefs that are formed by intentionality. Moreover, I had not considered that beliefs associated with intentionality fall into one of two categories: *perceptual* beliefs and *conceptual* beliefs. For the visual artist and their viewer, perceptual unconscious visual beliefs are individual beliefs – beliefs inherent in the individual underlie all other beliefs, precisely because they are *unconscious responses* to visual experience that underlie other *conscious* visual conceptions. Perceptual beliefs – in the hierarchy of beliefs – are therefore primary. But such beliefs are not necessarily uninfluenced in the processes of consciousness, and perceptual beliefs offer the possibility of being modified through a set of shared, or conceptual, beliefs in order to align with and share experiences common to others. As Dennett writes, *Human consciousness is made for sharing... the human user-interface was created by evolution, both biological and cultural, and it arose in response to a behavioral innovation: the activity of communicating beliefs and plans and comparing notes*<sup>2</sup>.

It is useful here, in order to illustrate my point, to describe to the best of my ability how an artwork is conceived. Whether the artwork has specific parameters, like a commission, or is a work that forms part of one's evolving practice, each work starts out as an intention that is carried by a proposition in the form of a question or answer. The work's identity is not immediate, but exists primarily as having a sense of potential. Experiences and memories relevant to solving the problem posed by the conception of the proposition enter into the arena of this potential. From this, a vague connective network is formed, while yet lacking any definite colour, shape, texture or even images. Time is spent trying to understand the conceptual aspect of the proposition, and during this time thoughts and images circle each

other. But nothing is concrete, and everything exists in a state of contemplation. Unconscious and conscious references emerge and submerge. In this *dance*, which can take days, months and in some cases years, the elements that are retained that will make up a work have a *correspondence* to the specificity of the original intention. That specificity or intention is a set of emerging beliefs – intention itself is an empty gesture: it is belief that gives meaning to the work through the criteria of forms relevant to it. For instance, how can one represent a contemporary pictorial space that corresponds to contemporary beliefs about the relationship we have today to space and time.

Consequently, a work that is clear in its beliefs – is clear in the criteria of forms relevant to it – is also clear in its intentions, and therefore easier and more likely to inspire confidence in its reading. If a historical work is difficult to read, assuming of course its competence, the problem lies in the fact that we no longer navigate the world with the same set of conceptual beliefs. And conversely, if a historical work still engages us and gives us visual pleasure long after its production, it is because the physiology at the base of our contemporary perceptual beliefs is not so very different today as it was thousands of years ago. For example, we still find repetition, balance, colour relationships, and relationships of forms engaging, although the conceptual content or manner of representation in a given work might be unfamiliar to us today.

At this point I need to offer something of a disclaimer. Producer and receiver are subject to their own physiological condition, and perceptual beliefs – however they may be essentially universal – and most certainly conceptual beliefs, which are culturally constructed, can vary from one place and time to another. While I have not focused on the specific physical circumstances of geography and variable conditions such as prevailing temperature, humidity, forms of nourishment and so on, I acknowledge their relevance and for want of space leave this area of research up to others. The human organism is responsive to all of these conditions, and not only responds but by necessity needs to memorize consciously and unconsciously each and every response in order to adapt and re-adapt to the most favorable conditions. Beliefs – conscious or unconscious – are inevitably based on what represent the most favorable conditions, firstly as a matter of survival of the individual and

secondarily the personal code of conduct that ensures individual survival within the group. Beliefs are therefore not only a matter of cultural choices but are spontaneous physiological responses, and consequently represent psychological necessities. The pictorial choices made by an artist are in response to all of the above conditions and must therefore be embedded in beliefs that underlie any action that is motivated by an intention.

Intention, as Damasio pointed out, is the construction of representations of the world, which is all we have to depend on as sensory intellects. They can only ever be myths, their most important criteria being that individually or collectively we can believe in them. Belief, therefore, is an innate condition of every action we take – including selective choices in pictorial representations. Beliefs vary from one particular cultural moment to another, and pictorial representations of space have been adapted to the beliefs that most closely represent the applicable collective or individual self-image. It should be remembered, of course, that one belief can be suspended in favour of another – beliefs are multivalent – and that doubt or disbelief is only a category of belief. One always exists in a state of belief.

To add a personal element to this, what makes the study of beliefs especially appealing to me *as a woman* – whose entry into the social, and largely male-constructed, body has been through an awareness of the specificity of my own female body and its consequently particularized conception of the world of representations – is that beliefs are first grounded in human physiology and then shared in the social space. This has both necessitated and permitted me to construct *my own* sense of identity through *my own* set of beliefs grounded in *my own* body and located in *my own* particular cultural and social history.

### **Belief, disbelief, changing beliefs and belief hierarchies**

To briefly reiterate, it is important not to lose sight of the relationship between beliefs and an artwork. An artwork is a combination of signs. Beliefs come into play in the reception of an art work – they are generated by the receiving individual, in that the individual has first *to believe in what is in front of them* and consequently is motivated, or becomes encouraged, through representation, that there exists *there* in front of them more than merely colour pigment applied to a surface. The moment of belief in the presence of the artwork, and the



recognition that it is more than its material manifestation, is the moment when perceptual and conceptual beliefs combine and stay active throughout the act of interpretation. It is during this process that the viewer also *imports* their own knowledge and beliefs, resulting in a hierarchy of beliefs that makes sense of what is perceived.

Having established perceptual beliefs as primary, the first question that emerged in the process of writing this thesis was how to order conceptual beliefs in a hierarchical order that promoted construction of a coherent meaning in the reading of each particular work. Would the order of importance be the same for each work, and if not, what criteria would place one belief ahead of another in a hierarchy? I felt it was important to ensure a conceptual consistency to the way the thesis approached each artwork, and this meant that I should first outline *in the same order* in each case the conceptual beliefs that I was deploying. These are, of course, the five collective (or conceptual) beliefs common to each historical period – Philosophical beliefs, Spiritual/religious beliefs, Medical beliefs (concerning the body), Scientific beliefs (concerning the optical) and Mathematical beliefs.

On this basis, I would then be able to examine the specific hierarchy that in the case of each artwork would arguably reflect the interpretation by an informed receiver – a receiver cognizant of the relevant historical conditions – confronted by that work. I would be able to suggest the dominant, or principal belief that would emerge from the interpretive process. In each case, the determining factor would be formed by the equivalence, or commensurability, between the pictorial resolution and the nature of a belief – or to put it another way, there must emerge a consistency between perceptual and conceptual beliefs for the pictorial representation to establish its credentials. In writing this thesis, the analysis of each artwork suggested its own hierarchy – again to emphasize, one that needs to be understood as relative to each individual's experience with an work, and is therefore generated by the individual and – *importantly* – not by the artwork itself. My summary of how a reception of each artwork encourages a particular hierarchy of conceptual beliefs – *while perceptual beliefs remain primary in all cases* – is as follows:

The <i>Ixion</i> Room	The Bardi Chapel	The <i>Nymphéas</i>
1) Perceptual Beliefs,	1) Perceptual Beliefs,	1) Perceptual Beliefs,
2) Spiritual /religious Beliefs,	2) Spiritual/religious Beliefs	2) Scientific Beliefs (conc. optical)
3) Philosophical Beliefs	3) Mathematical Beliefs	3) Medical Beliefs (conc. body)
4) Mathematical Beliefs	4) Philosophical Beliefs	4) Philosophical Beliefs
5) Medical Beliefs (conc. body)	5) Medical Beliefs (conc. body)	5) Mathematical Beliefs
6) Scientific Beliefs (conc. optical)	6) Scientific Beliefs (conc. optical)	6) Spiritual beliefs

A second, and corollary, question that emerged was: how can *establishing a hierarchy* contribute to an understanding of a given artwork? For this I would like to refer to Heinrich Wölfflin<sup>3</sup> who published in 1915 his *Principles of Art History, the problem of the development of style in later art*. Wölfflin created for drawing and painting a formal analytical framework comprising a set of five generalized representational forms and their pictorial possibilities. The five pairs of concepts he set out included: linear to painterly; plane to recession; closed to open forms; multiplicity to unity; and finally, absolute to relative clarity of the subject. His purpose was to show how all historical material is subject to continual transformations as part of an ongoing *development* – and it is important to stress that development should not be confused with its ideological twin, progress. He wrote:

It is a mistake for art history to work with the clumsy notion of the imitation of nature, as though it were merely a homogeneous process of increasing perfection. All the increase in the “surrender to nature” does not explain how a landscape by Ruysdael differs from one by Patenir, and by the “progressive conquest of reality”; we still have not explained the contrast between a head by Frans Hals and one by Dürer. The imitative content, the subject matter, may be as different in itself as possible, the decisive point remains that the conception in each case is based on a different visual schema which, however, is far more deeply rooted than in mere questions of the progress of imitation<sup>4</sup>.

What strikes me as significant in Wölfflin's analysis of how formal elements in a work of art are subject to transformations over time, and in his laying bare the more deeply rooted conception of a work of art through shifts in formal pictorial structures, is that such an analysis is applicable to transformations or shifts in belief structures. Each historical moment encourages certain beliefs in the apprehension by the viewer of an art work, shifts in belief equivalent to those that Wölfflin noted can be proposed, and the artwork's representational strategies – its significance on both a perceptual and conceptual plane, what Wölfflin called

*deeply rooted visual schemas* – better appreciated. At the end of each chapter I have proposed that the perceptual reception of an art work, and the interpretations of its signs, suggest that it is possible to link the most dominant pictorial element to a particular belief held at the time. In all historical periods, certain beliefs are dominant, irrespective of whether or not particular individuals hold to them. The artists examined here, in their conception of the artwork, selected signs that would most successfully convince their anticipated viewers of the commentaries about their own time that they wished to advance. The deployment of the signs gives unity to the representation, which gives clarity to the perception and reception of the artwork. That is what Baars means when he writes that concepts and percepts need to be consistent<sup>5</sup> – *internally* with respect to the individual's experience, and *externally* through the representation of that experience, as for example in the case of an artwork, in order to share it with others<sup>6</sup>.

There is another aspect to our relationship with an artwork that I want to emphasize. The matter of how an artwork works – with respect to its conception, production and reception – must involve a reciprocity of projections. By this I mean that there is a looping that I would describe as follows. Let's start with the necessity of understanding the belief structures, perceptual and conceptual, that can be described for any particular historical period. In cohering an appreciation of the dynamic involved in the intersection of perceptual and conceptual beliefs, any artwork under examination will remain *vacant* or in a state of suspension with *no secured presence*, until a viewer arriving with their own set of beliefs can be convinced to believe in the signs that can be interpreted from the reception of an artwork. One could say the artwork only appears or *coheres* by virtue of that inventory of interpreted signs that the viewer believes are there in front of him/her.

But equally, the artwork – as it is produced – establishes a ground, one could also say a *lens*, by which to suppose and examine the belief structures particular of a people at a certain time to the era of its production (on the one side) and its reception (on the other side). In this case, the artwork has a *secured presence*, it is the basis of all further examination.

The two separate processes described here reflect the classic modes of *deduction* – or reasoning from the general to the specific, and *induction* – reasoning from the specific to the

general. When I start by assembling the nature of beliefs, both perceptual and conceptual, I will finally glimpse the specificity of the artwork as a construct arising from that process; when I start with the specificity of the artwork, I will finally hope to construe the nature of the beliefs that can be assembled around it.

I am convinced that an artwork necessarily engages both these processes. In effect, it occupies at one and the same time a point of arrival and departure, a state of *undecidability*. This state is one that I described originally with respect to the *camera obscura*, whose properties were the subject of my Masters Thesis. The viewer in the chamber receives an image of the world caught by the camera's apparatus, a monocular projection that has *reduced the world to photons* oscillating on a surface.

The image, one can say has arrived, through the viewer's perception. But of course the viewer, unlike the surface of the projection, is an active agent. The viewer will – indeed must – leave the chamber, and what was initially a *re-presentation* becomes now a *representation* as the viewer, informed by the image, inevitably produces or causes to be produced changes in a world that was previously antecedent to its own re-presentation. It is this looping, referred to earlier, that ensures the instability of the image – of the artwork – and whose meaning – to borrow a phrase from Terry Eagleton – is to be *traced* as "a kind of constant flickering of presence and absence"<sup>7</sup>.

Consequently, it is possible to say that any investigation of pictorial space in relation to cognitive and belief structures entails a realization that the artwork under examination is both present and absent; that *its presence will be located* as we assemble or re-create the conditions for its presence. Conversely, those conditions become a field of research – a field of *deeply rooted schema*, in Wölfflin's phrase, or a *text*, to employ a term preferred by Roland Barthes – as we note the implications recorded in the fabric of the artwork itself.

On a more anecdotal level, in the process of researching and visiting each site I became aware just how much is communicated through the simple presence of one or more viewers in the examination of an artwork. Before I reflect on and compare in detail each work and its relationship to beliefs, I want to speak to an observation I made in relationship to belief formation as it concerns my experience on site.

### The experience of an artwork as a collective event

I visited each of the three bodies of work on several occasions over a number of years and became aware that I was sharing the experience with other viewers. In fact, I was never completely alone while visiting the *Ixion* Room, the Bardi Chapel or the *Nymphéas*, and in the process it occurred to me that each work *was intended to be shared* by more than one person. I found this collectivity confirming of my own belief in the experience, and that in the presence of other viewers I was having what amounted to perceptual experiences of seeing, smelling, touching, hearing – in a word, multi-sensorial experiences – that included feeling the heat on an unusually warm spring day, apprehending the perfume of a woman sitting near me that then melded into imagining the scent of Monet's representation of a flower in front of me. Seeing others standing in the presence of these works gave them scale. Their reactions could elicit contradictory emotions: apparently deep contemplation produced in me a similar sense of bonding with the work; apparent indifference dampened my own enthusiasm and confidence in what I was viewing. The impact of collective viewing has yet to be studied. When I now talk of collective beliefs, I am aware that we register them under many different circumstances, and our ability to form an association with beliefs is affected by these circumstances.

Precisely because these circumstances are so important, I wanted to break with the tendency of a viewer to adopt a passive stance, and the better to embrace a complex and multifaceted work I purposely paced back and forth across the space that each work occupied. Moreover, I applied myself to the roles that each work engineered for the viewer: I lay down in the *Ixion* Room as though having been invited to dine with the Vetii brothers; I stood before and knelt as though in prayer in the presence of Giotto's *Cycle of the Life of Saint Francis* inside the Bardi Chapel; I stood, walked and sat quietly in the two rooms of the *Nymphéas* paintings, as though at Giverny, as Monet would have wished, to refresh and feel the energy of the natural world. In each instance, I thought of a thousand different images they stimulated, heard the imagined voices of their makers reflecting on this or that pictorial decision. Being familiar myself with making extended works, I saw in my mind's eye the making of the works in progress: I imagined and felt the fatigue of the huge physical labour

involved in each; I imagined climbing the scaffolding of the Pompeiian artists, of having to work fast and efficiently with their materials; I tried to feel the older Giotto's cramping muscles as he climbed up yet another scaffolding to work on the frescoes of the Bardi Chapel; I moved the large *Nymphéas* panels in my mind, asking questions as to his choices of their location – I even dared to touch, gently, small areas of their surfaces (forbidden as it is). The cool, layered smoothness of the Pompeiian paintings; the smoother and less tactile surfaces of Giotto's frescoes; and the dry, warmer and crusty thick, raw, layered and scraped paint surfaces on Monet's *Nymphéas* canvases – each offered up a specific set of connections beyond purely visual perception, however charged it might be with multi-sensorial memory associations. In their presence and in my physical experience of each site, I received conscious and unconscious recognitions and associations that helped me to internalize the complexity of their pictorial spaces. And all the while, the presence of others.

In the initial stages of writing this thesis, I came to realize that it seemed premature to anticipate an evaluation of the relative significance operating between the belief categories examined, because beliefs *are not contained in the artwork* – they are the result of the beliefs that the viewer brings to the artwork and how the reception of the signs given up by the perception of an artwork can convince this viewer to believe in the meaning of these signs. I therefore set up a formal order of treatment that I could apply across the board as a comparative framework for all three artworks – the *Ixion* Room, the Bardi Chapel, and the *Nymphéas* installation. The order I chose has treated *perceptual sensations* as the primary belief – including the perception of horizon-line, scaling, framing, colour, perspective (monocular) and texture, line and mass – followed in each case by the five relevant conceptual beliefs, beginning with philosophical beliefs and followed by spiritual or religious beliefs, scientific beliefs – specifically beliefs concerning optics, mathematical beliefs, and finally medical beliefs, or beliefs concerning the body.

In the final stages of this writing, it became clearer to me how I might evaluate the *relative position* each belief structure held with respect to my reception and interpretation of each artwork, namely the *Ixion* Room, the Bardi Chapel, and the *Nymphéas*.

Now, having completed my review of the perceptual and conceptual beliefs that inform pictorial space in the three works, another layer of significance has emerged – a distillation of all that has been discussed here. I approach this with some trepidation, since the reductive process can result in over-simplification. However, my original purpose in looking at the beliefs we hold as they bear on artworks was *to find a sense of coherence* that would provoke awareness of their power to hold our attention. What follows is my review of how I have come to recognize what might lie at the core of such a coherence.

I can start by confirming *a general principle*, the first of two principles I believe have become evident through my research – that *the specific nature of pictorial space is revealed by a movement from perception to conception*, or to be more precise, from perceptual to conceptual beliefs. In this regard, I would like to present a summary of two recent articles that underline how perceptual mechanisms of mirroring, empathy and space, underlie our conceptions of them.

David Dobbs<sup>8</sup> writes that mirroring actions, such as in how we learn to walk, are also key to how we learn *empathy*, and consequently how to enter into culture. *Mirror neurons* can be found throughout key areas of the brain, which includes the pre-motor cortex and the centers for language, empathy and pain. They are active when we perform actions, or when we observe the actions of others. This suggests that everything we observe we in fact act out or *rehearse* – imitate them in our mind. It is believed that the purpose of this biological dynamic is to facilitate the complex exchange of ideas and assist in cohering the relationship we have to the world, and – I suggest – even *mimic* responses and the body language that reveals unconscious reactions to perceived experiences.

In a second article, by David Biello<sup>9</sup>, it appears that speculation concerning spiritual feelings would seem to be tied to specific regions of the brain. A connection was made between spiritual emotionalism and epilepsy, where the electric storm in the temporal lobe of the brain can be associated with an obsession with religious or moral issues. Vilayarnur S. Ramachandran of the University of California, San Diego, observed that religious words – such as God – elicited an unusually large emotional response in patients with temporal lobe epilepsy. During an epileptic seizure, these patients exhibit particularly strong electrical

activity; since the limbic interior regions of the brain govern emotions and emotional memory, this may be the cause of their having a greater propensity to religious feelings. This seems to be borne out through studies that tracked the brain activity of Buddhist monks engaged in meditation; these studies discovered that the part of the parietal lobe that normally aids navigation and spatial orientation was especially silent. It is thought, as a result, that the perceived dissolution of physical boundaries and the feeling of being at one with the universe – the sense, or desire, associated with religious fervour – is connected to such brain activity, whether owing to a pathology or to self-inducement.

What would appear to be common in these findings is the matter of spatial dimension and the processes involved in locating ourselves within it, and this leads me to frame my *second, and particular, principle*. As I have mentioned elsewhere, the research question out of which this thesis evolved has from the beginning been my interest in the relationship of the body to art-making, and how to construct a contemporary pictorial space that reflected my awareness of my body as a woman in the context of contemporary society. If this thesis has demonstrated anything to me, it is the fact that *perception and conception are, in a sense, a mirror of each other* – that is the basis of their coherence, or *commensurability*, and it is the means by which the meaning we can ascribe to a given work achieves the power to persuade and convince us of their authority – for good or ill.

I cannot think of any instance of this more profoundly illustrated within our cultural tradition than when in *Snow White* the Dark Queen asks the mirror – *the mirror that speaks the judgment of commensurability* – the fatal question: *Mirror, mirror, on the wall. Who is the fairest of us all?*

While I feel that it is important for me to articulate these two principles – the movement from perception to conception, and the commensurability that binds them, *mirror-like*, to determine and persuade – through specific application to the three artworks I selected, a general statement can serve to introduce them. If *mirroring* is a means of naming what an artwork *does*, then of the principals involved in this *doing*, the *artist* on the one hand and the *viewer* on the other, we should examine what occurs in each case. For the artist who, in the act of representation must *stand back from the mirror that becomes* the representation, the



movement from perception to conception occurs within the *doubled space* – analogous to the reflective space that mirrors produce – *as a movement of disengagement*, away from the surface of the mirror in order to conceptualize their own perceptions. A literal example would be Monet painting the *Nymphéas* in his studio. For the viewer, this movement within the doubled space of the mirror must be a *movement of engagement*, as their perceptual apprehension of the mirror's conceptual framework establishes a necessary movement towards *empathy* in order to resolve the commensurable relationship between perception and conception that the mirror demands. Such movement, whether disengagement or engagement, involves narrative time in the sense that judgments are being made, and judgments occupy time. But this doubled space, which may take on the character of an infinite regress, is itself locked within the embrace between perception and conception, an embrace that is itself of course a form of mirroring, a doubling, a folding of one to the other, and in this manner exists in fact *not simply in narrative time* – but also in *simultaneous time*, simultaneous one to the other. We exist within the *simultaneous space of our own perceptions*, space-less – or to employ the American art historian Michael Fried's acute observation: "*presentness*". The mirror of time is space – in the *Ixion Room*, in the Bardi Chapel, and in the *Nymphéas*, it is *pictorial space* – and I want now to elaborate on the relationship between the mirror and that space.

Turning to the *Ixion Room*, the most obvious evocation of the reflective mirror occurs in the classical tradition of *trompe l'oeil representation* – the technique that would ideally replicate meticulously the world of material experience. That tradition has continued to underwrite Western thought, and certainly painting – as both ideal and nemesis. The ideal is expressed in the decorations of the *Ixion Room*; its nemesis was already centuries old in Plato's condemnation of the artist in his *Republic*. And yet, for both the artists of the *Ixion Room* and for Plato, the mirror seems central to their enterprise: for Plato, the mirror opposition of the real versus the artificial; for the *Ixion Room* artists, the artificial as the real.

The metaphoric *mirroring* in the *Ixion Room* sets up a left-right symmetry in all three registers. In the Upper Register, a triad representing the Roman pantheon, a hierarchy of gods and goddesses to which were attributed various strengths and weaknesses, mirrors the

terrestrial world's familiar struggles, and their presence here defines the room as a closed but *mirroring* universe. This mirroring acts as a *connective*, a strategy for depicting *empathy* between the two worlds – the terrestrial and the divine. In the Middle Register, the *symmetry* of mirroring focuses the viewer on a narrative constructed by the mythological scenes, in which actions of the gods and goddesses mirror the perils of human (genealogical) transgression. Empathy here is applied as an act of maintaining biological integrity, socialization presented as a lesson in morality. *Mirroring* as a perceptual element is perhaps always evident in *spiritual/religious beliefs* – the world space is itself a mirror, in which a mutual acknowledgment operates between divine beings that preside over every aspect of human existence, and humans themselves, who need to acknowledge them in order to complete their mutual "presentness". Man recognizes himself through acknowledging his reflection. What is striking about the Roman experience is that the mirror world of the divine required a form of hailing from the terrestrial world in order for that empathetic response to exist; otherwise, the celestial sphere acted out its mythic narratives *in a parallel universe*, with Man as supplicant – bearing bribes – to his own reflection.

For Roman *philosophical beliefs*, mirroring as a form of *opposition* – a tradition that stretched back to Pythagoras – worked transformatively through the operation of *nous* – the dualism of mind – the *reflection* – and matter, that *which is reflected*, which created the discourse for judgment and change. For Stoics there was the opposition of nothingness and worldly turmoil requiring responsible choice. For Epicurus, the opposition of truth and falsehood required consistency as a form of judgment formation. For both schools, the issue lay in the *resolution of inconsistency* between the Self and the Other.

Roman *mathematical beliefs* are indebted sometimes to religion, and always to philosophy, for the apprehension of complete and closed, finite, models – the *infinite regress* of the mirror. Mathematical beliefs can most clearly be seen in Euclidean geometry as an idealized mirror of divine order, with its *circle* of divination, the *triangle* reflecting the *triadic* clusters by which the gods could be hailed, and the *square*, the equivalence established by the mirroring of heaven and earth – so evident in the pictorial representations of the *Ixion* Room. Geometry became the terrestrial measure and transformer, conforming

everything to its closed system of *symmetrical units* or equal proportions of relationships between parts and the whole.

Roman *medical beliefs* concerning the organic body were greatly influenced by the theory of atoms, in which the philosophical principle of oppositions was applied to the body. In such an oppositional formula, the obvious mirror-like duality of the body's structure – its symmetrical arrangement left to right – invited comparison with a divine order. The *coarseness* of the vital organs, for example, was opposed to the *fine* atoms of the soul – the body's very creation becomes the divine mirror. In the *Ixion* Room, it is tempting to read in the Middle Register the depiction of the sacrificial phallus – the privileged organ of creation in the terrestrial realm – as a correlative to divine creation in the Upper Register. But the aspect of the body that is most significant for the paintings is the *optical system*. For Roman medicine and science, the anatomy of the eye and the physiological nature of vision appeared to demonstrate the process of mirroring as a principle of nature. In the structure of the optic nerve before it arrives at the optical chiasm, there is a mirroring of two diverging or converging optical nerves. Applying the divinely-inspired principles of Euclidean geometry, it was held that rays *diverged* from the eyes to frame the image and then conversely *converged* back into the optic nerve for apprehension to occur. The *symmetry of convergence* of the representation of the windows on all three walls in the *Ixion* Room not only draws attention to the myth, but conforms to its perception by the viewer. In other words, I would suggest that the Roman artist *privileged the moment of perception* – the *converging* illuminated rays – *over the mechanism of apprehension* – the *divergent* encompassing rays – in a strategy of that gives definition to Roman pictorial space as a construction formed by the action best described as that of a reflection in a mirror, in which it is *not what is to be seen, but what is seen* or perceived that is the subject of painting. But what *is* seen is not *transparency*, but *potential*. The space of the *Ixion* Room's symmetrical perspective is interrupted and occluded by the entablature that frames the mythological panels. The perceiver perceives the possibility of space represented as *beyond* the trompe l'oeil windows, whose representation forms a convergence away from the viewer in a *mirroring of the convergence* that was considered to form the image in the eye itself. The infinity of

uncertain, uncontained space became bearable for the Romans only in the conception of it as potential – as *transformation* inscribed into the narrative of each myth.

Not surprisingly, Roman *scientific beliefs concerning the optical* embraced medical, mathematical, epistemological, and consequently physics – or physical causation – mirrored the totality of their beliefs. The result can be described as a *viewer relative model*, in which interaction of the perceiver with the world *mirrored the perceived world*, just as the cone of vision mirrored back not an objective picture, but one that was deeply subjective with respect to space and volume.

Mirroring as a *perceptual empathetic strategy* is central to Giotto's *Cycle of the Life of Saint Francis* in the Bardi Chapel, and reflects key elements in both Giotto's approach to representation and in the narrative that is being represented. Picturing the reception of the stigmata by Saint Francis had previously been conceived as an uncomplicated mirror image by Giotto, among other artists, in which the wound on the right hand of Christ is transferred to the left hand of Saint Francis. Man is a mirror image of the divine, an implication that Man is ultimately merely an artificial *reflection* of the Truth. But in the Bardi Chapel representation, there is instead an *equality* represented between the saint and the saviour in that the transference from the wound on Christ's *left* hand is transferred to the Saint's *left* hand. Saint Francis is no longer an artificial construction, but has been accepted as having *equivalence* with the Divine. One could say that Giotto – working through Saint Francis – *breaks* the mirror. Everything in his Bardi Chapel *Cycle* representations and its narrative want to go *beyond the mirror*, to collapse the illusion and *to make the reflection real*. The wounds of Saint Francis become real in *The Death Of Saint Francis and the Verification of the Stigmata* – flesh and blood and pain. Moreover, Giotto has gone to great lengths to locate the viewing Faithful within the actions depicted. Rather than utilizing the mirror of real events to remain distanced within the extended or doubled space of the mirror reflection, Giotto invites the viewer to cross the threshold, to step through the mirror into the presence of the Divine, a privileged member of God's creation.

But it is also through another dimension of the mirror, the act of *empathy*, or *imitatio*, that the real comes into being. Because religious beliefs are counterintuitive, an apparatus of

proof helps to make the unbelievable believable. Saint Francis becomes that apparatus. For the Roman, the notion of the Divine mirroring the terrestrial worked as long as there was a direct relationship between the Roman pantheon and terrestrial human reality. However, with a monotheistic religious system – in which there could be no appeal beyond the singular deity, and a God that was consequently almost necessarily infinitely good and forgiving – a projection of desire that held little in common with any real experience – this relationship was limited in scope to that of a child's dependence on a kind and forgiving father. In the increasingly sophisticated conditions of the fifteenth century, such a dependent relationship was becoming less appropriate; one might say it had become necessary for the child to take on some responsibility. Historically, it could be argued, Saint Francis reflected that necessity, as though in a mirror of his age, and it could be further argued that Giotto was the artist who framed it. If Christ, as the Son of God, was intended to be the empathetic face of the Divine – the ambiguously mortal suffering connection – Saint Francis assuming Christ's sacrificial burden under the extreme conditions of the chaotic Middle Ages, becomes the *model for empathy* and therefore the *terrestrial real connection* to the abstract reality, what one might call the mythic status, of Christ in God, *responsible in Christ* for humanity's transgressions. Man as an aspect of the Divine. We know from the historical record that Saint Francis consciously applied himself to the expression of emotion – specifically tenderness and sorrow. We know from Giotto's *Cycle* that the expression of emotion plays a key role in establishing the space of the real as individually felt emotion.

*Religious beliefs*, it is safe to say, were renegotiating knowledge as solely the terrain of the Divine, and faith and reasoning in the period become increasingly intertwined. What constituted the relative properties of both, and their intersection, posed significant and sometimes fatal questions of interpretation. In the *Apparition at Arles* there are architectural projections that converge in heaven while others converge on the saint's vision – a clear picturing of ambiguous allegiance. The resulting pictorial space is that of redemption – God's divine mercy – mirroring the real – Man's ability to empathize, an ambiguous duality involving both a possible and unavoidable exchange. The turbulent questions surrounding the Eucharist – the precise nature of real, humanly baked bread transubstantiating into the

abstract body of the Divine – highlights the metaphysical anxiety surrounding definition of the real – anxiety mirrored in Saint Francis's appropriation of stigmatic reception.

Metaphysics, of course, ruled the era, and *mathematical beliefs* were central to an inquiry into knowledge. Roger Bacon believed that within mathematics could be revealed the hidden dimensions of transcendental reality, and the application of mathematics as an aspect of Divine order can easily be read into Giotto's frescoes, as it can be to the architecture of the Basilica itself, a formulation for the *real presence* of the Divine. The commensurability of numbers, delivered in the frescoes through the grid and symmetrical mirroring affirms the integrity of the whole read through the infinity of the parts – God's infinite *Indivisibility* read as commensurable to Man's infinite *Divisibility*. The one mirrors the other.

Giotto's *Cycle* is deeply influenced by *philosophical beliefs* that can be traced to Ockham's insistence that knowledge is best acquired through direct experience, and that the human mind is capable of apprehending its own acts, as well as those of other individuals – including *sensible qualities*, the experience of emotional connection. Giotto takes the viewer through the process of enlightenment step by step to reveal that emotions, *their motion or empathy*, is the route by which to approach divine perfection, to approach Grace, or the Will of God. The significance of this lay, as Ockham maintained, in that there existed no necessary reciprocity between Man and God, with both being free agents possessing free will. The only way to pass through the mirror to God's infinite mercy and goodness lay in empathy – the commensurability of the parts to the whole.

The parts of the body to the whole organism constituted a parallel investigation of commensurability. Again, under the influence of Ockham, Man's apprehension of the world was understood to be mediated only by the senses. Medical research into the body's functions, its pathology and physiology, suggested a closed metaphysical system: *redemptive empathy* purifies the soul through its location in the heart as the site of emotion, the heart understood as the purifying agent of the blood and hence the body. The *opposition or duality of body and soul* are simultaneously redeemed in a rehearsal of commensurability. Particularly important to medieval understanding of the body was the connection of the eyes to the brain, which was divided into five senses and reason, memory and judgment – leading,

through *perception*, to the sensible soul, the soul that Giotto depicts as *emotively* charged with God's Grace.

Of the metaphysical complications of the period, the nature of light, and the questions surrounding optical transmission, is perhaps one of the most fascinating. Since light was always Divine light, the origin of light and its reception underscored all aspects of human perception. Due to its *immaterial* quality, it was considered to *complete the material* world, which without light simply vanished. Light, Divine light, revealed the existence of the world – brought it into being, and the optics of the human eye, with its spherical shape an evocation of the perfect sphere of Heaven, linked Divine light with Man's *sensible* nature – that is, human awareness through the senses – and the soul. In Giotto's *Cycle*, vision itself is formed by radiating straight lines of perspective suggesting the transfer of Divine light to earth. I propose that Giotto was representing the belief that light, and the images it conveyed, *crossed over* in the optic chiasma – transforming Divine light into the materialized, perceived light available to the physical body of Man, a *transubstantiation* of the Divine into the realm of terrestrial reality. It is this concept of transference that permits Giotto to represent his Saint Francis passing through the mirror to align himself with God, to merge the material and immaterial realms of existence, to dare to attempt to resolve duality and opposition.

Narcissus, looking deeply into the surface of the pool, allowed empathy its fatal embrace of the self, and as a consequence of penetrating the mirror surface of his reflection, perished in solipsism. The myth has always been instructional for its warning that the self must always find its *Other* incarnation. If Giotto pictured Saint Francis as sensible mortal penetrating the mirror surface of desire to pass through to the abstraction of the Divine, he pictured precisely the commandment that perfection resides in an elision of opposites becoming *simultaneous realities*. Presentness as Grace, to employ Fried's quotation in full.

The Orangerie is just such an instance, expressed as architecture. A classical building in the elaborate beaux-arts tradition, it was conceived in order to house a simple grove of orange trees. That origin must have both amused and touched Monet as the perfect echo to his *Nymphéas*. The mirrored surface of the pond at Giverny that Monet offers his viewers in the Orangerie has been compared by Stephen Levine to the narcissus myth, Narcissus

drowning in Echo's still, reflecting pool to her everlasting sorrow, and fatal curse. Was Monet seeking his true or perfect nature in the mirror of his own perception, Levine asks. I disagree, and I will leave aside any suggestion that artists are merely self-reflective; art is a public act to be shared with others. In any case, the pond at Giverny is not a pool, it is water in motion, ever-changing. Monet, in his hours of observing the pond at all times of the day, had no interest – unlike Narcissus – in the surface as self-reflecting mirror. His interest lay instead *not on*, but *in* the surface – in the *membrane* of that surface.

Unlike Giotto's Saint Francis, moreover, Monet's purpose was not to *conjoin* with Perfection (the idea of divinity would have been foreign to his thinking) but to linger and reflect on the *dimension* of that surface – on the looking, *the act of perception* itself. Monet's extended study was devoted to seeing through and into that act, and his looking brought him back time and again to the tympanum surface of the pond as its *motion* mirrored – *reenacted* every movement of the air on the water, every movement and volume of the reflected clouds, every brush of the willows on the pond's surface; and he would have danced, internalizing the reflected and refracted play of light. He would have memorized the sensations of colours, the diagonals, horizontals, and the memory of the material density and texture of flowers, grasses and trees rimming the shore. He was a gardener, after all – not a flower god. In short, the pond was real, his perceptions occupied real time and space, and his multi-sensorial experiences of the pond were indelibly memorized as episodic shifts of position. It is this that is the reflection made manifest in the two rooms of the Orangerie.

It is known that only occasionally did Monet feel the need to refresh his memory by painting outside in the last years of his life. Saint Francis, through *his* act of empathy in observing the life of Christ, was thought able to induce and incorporate the stigmatic wounds on his very body. Monet, in *his* intense observation of perception itself for the whole purpose of capturing *exactly* what he *saw* – a simple pond; and, later – painting the *Nymphéas* in his studio from the memory of that act of perception – paints not just a remembrance of things past, but a reenactment of his own empathetic, mirrored movements, the act of being there, of being in the act of perceiving.



*Scientific beliefs concerning the optical* in the nineteenth century shifted the laws of optics from the metaphysical dimension to the physical dimension of sight, with light traveling in waves that create agitations on the retina, where they are transmitted to the visual cortex via the optic nerve. This pulsating light creates in the visual cortex psychic sensations. Psychological seeing, or now *perceiving*, shifted *knowing* to an unseen subjective knowledge of the body that we are still mapping today. Light is an energy field perceived by the whole body. The water metaphor – that light moves in *waves* – seems especially appropriate to Monet's presence at the pond: water *mimicking* light, light mimicking water – and the body mimicking both.

At the same time, *medical beliefs*, vastly assisted through technological innovation, revealed new dimensions of seeing, one example being the X-Ray's ability to see through material substance just as Monet could peer through the surface of the pond. Mesmer had shown how the body was receptive to magnetic fields that penetrated the skin and pores, while Freud revealed the extent and structure of the unconscious emotional life and the effects of psychological relationships – the external world of appearance mimicking the internal world of sensation. For Monet, as with other artists, it was clear that art, painting included, could reveal both the conscious and unconscious dimensions of perception. The material that is seen mirrors the material that is not seen. Clouds, for instance, have invited the projection of perceptions not secured by anything material to the clouds themselves, but secured instead by the insubstantial drift of the individual perceiver's inner emotional cross-currents of layered anticipations. Monet's clouds reflected in the surface of the water take on emotive dimension.

Kant placed the experience of self as memory and time, as qualities that could only be known as phenomena of the brain and *through which reality was determined by individual perceptions*. The conclusion to be drawn was that it was *the mind's ability to conceive* that gave a true picture of the world, not the other way around: the mirror reflection of the mind is the real world, or as real a world as any. This naturally granted a great deal of freedom to the extrapolation of reality's potential, and Monet's representation of the *Nymphéas* as an extended reflection on perception is evidence of that. To push representation beyond its

conventional limits, Schopenhauer's *Will as Das Ding an Sich* argued that *capturing simple appearance* will make it *one's own* representation. Now, instead of the observer mirroring nature, the representation of nature mirrors the observer. This is the point at which the commensurability between perception and conception becomes identical, an *infinite regress* as perception represents conception that represents perception – revealing that which cannot be seen – known – in any other way. But the Will must be exercised, which can only be rendered in time, and the body's sensations also can only occur over time, *making experience in space a duration in time*. Monet, dealing with the sensations that are engendered by the movement of light in the day, constructs for the viewer the subjective perceptions of constant altering appearances in the boundless indefinable space of the pond's constantly shifting reflections, reflections that produce the sensation of space as the sensation of time. Perhaps it is a fitting gesture to Monet's apprehension of the membrane of the mirror that his last wish was to be buried in a buoy spending his eternity in motion, neither above nor below, in a multiple dimensional space of suspension.

In trying to understand the impact of the speed of light over great distances, and rethinking Euclidean geometry in three dimensions, mathematicians discovered that a single entity could simultaneously occupy two positions, and that space over great distances is curved. The *Nymphéas* installation abandons not only traditional perspective – the surface of the pond is displaced in a series of episodic projections – but the walls of the rooms themselves are curved, and the viewer's relationship to the projective dimensions of the pond in both rooms is no longer in relationship to an autonomous flat painting, but a painting that merges into curved space. The relationship to pictorial space further compromises conventional perspective when, in Room Two, the viewer is positioned on an *inverted* shore. These new pictorial spatial propositions construct for the viewer the potential of re-enacting for themselves through their own experience the concept of multiple geometries, relative positions with more than one dimension of space. Monet's conception of the *Nymphéas* is that the rooms would reflect his own perceptions of world space reflected back to the viewer.

Monet was certainly looking for a place of wholeness, for an uncontaminated way to connect to a Nature that had been so diminished and restricted in theological discourse.

Monet gravitated towards the *tabula rasa* and Rousseau's romantic longing wherein nature's uncontaminated purity could be perceived only through the cracked mirror of contaminated cultural conventions. Near the end of his life, Buddhist philosophy and its rejection of a named creator seems to have touched a cord in Monet. Although the evidence is only a small yellow painting and a book, Monet's relationship to nature, at least the desire of his own nature – as an artist – to see with fresh eyes as though for the first time, mirrors Buddhism's conception of nature as chaste, pure, innocent and unsullied – continually flowing in universal space and time, having no origin and no dimensions other than sensations. Monet painted the *Nymphéas* as close to the surface as possible, using nature as a foil. I would suspect that if my conclusion is correct – that Monet's project was to study the membrane of representation at the point where the surfaces of perception and conception met, where *how* we perceive meets *what* we perceive – then it is unlikely that he would have been interested in abstract painting's representation of pure sensation. Pictorial space in the *Nymphéas* is all the more subtle and powerful for occupying the permeable surface of the looking glass.

What have I learned! As an artist and art historian, I have come to understand that the complex relationship the body has established with the world is one invested in self-interest – interest in the nature of the self. By this I mean of course not some form of solipsism, but rather a profound recognition of – I could even say a reacquaintance with – the necessity to create a world-within-a-world of what is knowable – what can be believable. Pictorial space is one of those worlds – my chosen world – into which the body can insert itself, can project itself, through what is believed about what is known. In the truest sense, this is a make-belief world, a world that loops together, informing one another, interweaving the strands of the physiological and perceptual/multisensorial potential with the conceptual potential that constructs this edifice of our interpretive imagination. The representation of pictorial space, as I have tried to demonstrate, is not a matter of simple conventions, nor in any way a story of progress, and hardly a question of style, but a matter of beliefs – those fragile but tenacious attachments to what we trust – from time to time – is some form of persuasive knowledge. Artist and viewer merge along the axis of belief – as an act of persuasion becomes an act of interpretation.

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**End notes      Introduction**

<sup>1</sup>Bernard J. Baars, *In the Theatre of Consciousness*, New York, Oxford University Press, 1997, p. 86-89. Conscious concepts are always internally consistent, like perceptual experiences. They occur one after the other. However, when the mind is competing between very different conscious contents, they can only be dealt with one at a time. Similarly, visual images, or words in conscious perception, are always coherent even if the nervous system needs to cancel some input or suppress one thing for another. As in the visual system, one image will be suppressed for another. As in the figure-ground reversal or other illusions, one can only switch back and forth between them – one can never see both figure and ground simultaneously.

<sup>2</sup>Clement Greenberg, *The Collected Essays and Criticism*, Volume 4, John O'Brian (ed.), Chicago, University of Chicago Press, 1995, p. 85.

<sup>3</sup>*Ibid.* p. 85-87. Kant, Greenberg writes, and I paraphrase, used logic to establish the limits of logic...and logic was left all the more secure in what remained of it.... Flatness alone was unique and exclusive to pictorial art... Modernist painting orientated itself to flatness as it did to nothing else... Modernism's success in doing so is a success of self-criticism.

<sup>4</sup>Woman artists referencing the body who were of interest to me during the 70's they include Georgia O'Keefe, Helen Frankenthaler, Carolee Schneeman, Eva Hesse, and Joyce Wieland.

<sup>5</sup>Clement Greenberg, *op. cit.* p 97.

<sup>6</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, Cambridge, Mass., Cambridge University Press, 1986, p. xi – xii.

<sup>7</sup>Nycole Paquin, *Faire Comme Si...*, *mouvance cognitive et jugement signethétique*, Montreal, XYZ éditeur, 2003, p. 13.

<sup>8</sup>Nycole Paquin, *Le Corps Juge: science de la cognition et esthétique des arts visuels*, Montreal, XYZ éditeur, 1998.

<sup>9</sup>Jacob Burckhardt, *The Civilization of the Renaissance in Italy*, S.G.C. Middlemore (trans.), London, Penguin 1990, p.19 -97, p. 19.

<sup>10</sup>*Ibid.* p. 19.

<sup>11</sup>Nycole Paquin, *op. cit.*, (*Le Corps Juge: science de la cognition et esthétique des arts visuels.*)

<sup>12</sup>Richard L. Gregory, *Eye and Brain*, Toronto, McGraw-Hill, 1973. First published in England in 1966.

<sup>13</sup>Hubert Damisch, *The Origin of Perspective*, John Goodman (trans.), Cambridge, Mass., MIT Press, 1995, p. 4, 11, 19-20.

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<sup>14</sup>David Summers, *Real Spaces*, London, Phaidon Press, 2003.

<sup>15</sup>*Ibid.* p. 4.

<sup>16</sup>David Summers, *op. cit.* p. xxiii.

<sup>17</sup>David C. Lindberg, *Theories of Vision, from Al Kindi to Kepler*, Chicago, University of Chicago Press, 1996, p. 151.

<sup>18</sup>Hubert Damisch, *op. cit.* p. 19.

<sup>19</sup>David Summers *op. cit.* p. xxx.

<sup>20</sup>R.A. Sharpe, *Making The Human Mind*, London, Philosophical Investigations, 16:1, January, Routledge, 1993, p. 93. This paper discusses the way we speak about human beliefs, intentions and motives. Its claim is that it is fundamentally different from the way we speak about physical states and processes.

<sup>21</sup>Antonio R. Damasio, *The Feeling of What Happens: body and emotions in the making of consciousness*, New York, Harcourt Brace, 1999, p. 312-335.

<sup>22</sup>*Ibid.* p. 312-322. This chapter is on the importance of the self, being aware of an objectified self, making judgments and performing actions is crucial to first order beliefs? It is this objectivity within the subject that is the dialectical project of the necessity to make choices. ( Perhaps this is as close as Riegel, without cognitive references, gets to the idea of Kunstwollen, ) The ever new information that comes into the body and the constant necessity to adapt to survival are what might I propose could be attributed to the impulse of the Avant – Garde, the visible transformations or adaptations implied in the constancy of change over a life.

<sup>23</sup>Antonio R. Damasio, *How The Brain Creates The Mind*, Scientific American, December, 1999, p. 112 –117.

<sup>24</sup>Nycole Paquin, *op. cit.* (*Le Corps Juge*), p. 27. While most writings on aesthetics take an ideological position, whether philosophical, social or feminist critique, what makes Paquin's analysis innovative is her ability to write a post modern account of aesthetics whose primary source is the totality of the bodily experience, meaning the perceptual and conceptual parameters that facilitate the individual's response to itself and its environment.

<sup>25</sup>Barbara Maria Stafford, *Good Looking*, Cambridge, Mass., MIT press, 1997, p15. Stafford calls for an abandonment on the attack on visual primacy and privilege. In Barbara Maria Stafford. *Visual Analogy, consciousness as the art of connecting*, Cambridge Massachusetts, MIT Press, 1999, p.179 she suggests that the disembodied brain is not able to reconcile with our "gut feelings" or sentiments. She appeals to inter-disciplinary reflections especially to cognitive science.

<sup>26</sup>Barbara Maria Stafford, *op. cit.* (*Good Looking*), p.15.

<sup>27</sup>Sheena Rogers, "Perceiving Pictorial Space", William Epstein and Sheena Rogers (eds.), *Perception of Space and Motion*, San Diego, Academic Press, 1996, p. 119.

<sup>28</sup>Phillip W. Roseman, *Understanding Scholastic Thought with Foucault*, New York, St. Martin's Press, 2000, p. 101.

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<sup>29</sup>*Ibid.* p.100-101, 128.

<sup>30</sup>John Campbell, *Past, Space, and Self*, Cambridge, Mass., MIT Press, p. 8-16.

<sup>31</sup>*Ibid.* p. 5-19.

<sup>32</sup>Henry Montgomery, "Towards a Perspective Theory of Decision Making", *Acta Psychologica*, 87, 1994, p. 155-178.

<sup>33</sup>John Campbell, *op. cit.* p. 3-8.

<sup>34</sup>David Rose, "A Portrait of the Brain", Richard Gregory and collaborators (eds.), *The Artful Eye*, Oxford, Oxford University Press, 1995, p. 37.

<sup>35</sup>David Rose, *op. cit.* p. 37.

<sup>36</sup>Margaret A. Hagen, *Varieties of Realism; geometries of representational art*, Cambridge, Mass., Cambridge University Press, 1986, p. 6.

<sup>37</sup>Michel Foucault, *The Order of Things / Les Mots et les Choses*. New York, Random House, 1973, p 3-16. The role and presence of the observer has been taken up by Foucault in this book and elaborated in the relationship to Velasquez' painting *Las Meninas*.

<sup>38</sup>Margaret Hagen, *op. cit.* p. 33-63.

<sup>39</sup>Sheena Rogers, *op. cit.* p. 121. Rogers quotes the eminent experimental psychologist James Gibson as challenging the conventional retinal-based theories that accounted for perception of pictures, by proposing instead taking into consideration the optic array, which is more complex than the retinal image (Gibson, 1960/1982 p. 261). Gibson writes that *Ambiguity and uncertainty are not qualities of our perceptual experience because perception depends on the richly informative spatiotemporal optical structure present in the transforming optic array of an active, exploring perceiver. These structures are uniquely specific to their source and are therefore unambiguous and informative: When a certain optical structure is present so too is a certain environmental state.* Rogers extends this hypothesis, arguing that while a single theory should explain both the experience of the real world and pictures, the *snapshot view* of the world is the exceptional situation. Rogers argues that Gibson's hypothesis precludes an *information-based account of pictures*, treated by Gibson as a frozen array that cannot be explored by the perceiver. The resolution of this paradox lies in learning more about the limiting conditions and information that produce a unique relationship between an optical structure and the environment particular in motion.

<sup>40</sup>David Rose, *op. cit.* p. 37. The paintings of Vincent Van Gogh show curvature and distortion away from linear perspective that Heelan (1983) suggests indicate an awareness on the part of the painter that visual space is not Euclidean. Empirical evidence for the non-metrics is extensively verified. The degree of distortion varies with the background context in a visual scene, becoming more Euclidean as the complexity and naturalness of the background increases. French (1987) presents a dualistic explanation of this dissociation between phenomenal and physical space, and Gregory's perceptual proposition suggest that perceived space is a hypothesis about the layout of physical space.

<sup>41</sup>Harvey Richard Schiffman, *Sensation and Perception, an Integrated Approach*, New York, John Wiley, 1996, p. 100-101. The observer's eye movement is adapted for the purpose of orienting and searching for targets that lie in different directions and at different distances. The observer, because of eye movement, can also fix on and focus so that the image of a target falls on the fovea, where vision is the clearest and most acute. If the eye is fixed too long on any given image, the chemicals that stimulate vision need to be regenerated by looking at a different target.

<sup>42</sup>Margaret A. Hagen, *op. cit.* p. 6, 323. According to Hagen, Gibson, writing in 1955 on the visual angle in the analysis of vision, did not adopt Euclid's law of appearances. Rather Gibson postulated an ecological approach to visual perception, which by describing the environment of the organism, ultimately describes the organism itself. Hagen has elaborated on Gibson's position by proposing that human perception has evolved in such a way as to have a roster of persistent perceptual properties, such as size, shape, distance, colour, slant and composition. The persistence or change of these perceptual properties, their variants or invariant characteristics, are subject to certain conditions. It is by understanding the interface of the variant or invariant properties at any given time with the existing conditions that one can develop a pattern which is useful for comparison. Hagen has developed a geometrical analytical model for four different pictorial perceptual models by comparing the result empirically: metric, similarity, affine and projective perspectives.

<sup>43</sup>Antonio R. Damasio, *op. cit.* p. 51. As the title suggests and Damasio writes:

"... Emotions are complicated collections of chemical and neural responses, forming a pattern; all emotions have some kind of regulatory role to play, leading in one way or another to the creation of circumstances advantageous to the organism exhibiting the phenomenon; emotions are about the life of an organism, its body to be precise, and their role is to assist the organism in maintaining life..." [in the formation of an image this is no less true].

Margaret A. Hagen, in her *Varieties of Realism*, writes:

"...it is not merely a question of transmitting knowledge about an object, person or event...paintings transmit knowledge of a certain type, the tacit knowledge of perceptual experience. All representational paintings succeed as representations because they carry perceptual information about the subjects they picture, but not all painting carry the same feeling for the spectator of "being there...". She gives as an example an orthogonal or metric projection in every way parallel to the picture plane with no possibility of the viewer entering or projecting themselves physically into the pictorial space.

<sup>44</sup>Stephen M. Kosslyn, *Image and Brain: the resolution of the imagery debate*, Cambridge, Mass., MIT Press, 1994, p. 133, 362. Gravitational uprightness is one aspect of how pictorial spatial regions are organized, in that it becomes a frame of reference for orientation. It seems that in memory, lack of this kind of upright reference frame makes it more difficult to remember the content of images.

<sup>45</sup>Margaret A. Hagen, *op. cit.* p. 98.

<sup>46</sup>*Ibid.* p. 102-104.

<sup>47</sup>*Ibid.* p. 265. Margaret A. Hagen believes that the lack of a singular perspectival proposition in Roman painting, marked by the lack of a single vanishing point, is the result of combining multiple view-points into one picture. From a contemporary position, we measure the deviations from what we have accepted as the norm. My thesis adds to Hagen's conclusion by analyzing step-by-step how in the Ixion Room the multiple views are motivated and constructed for the viewer.

<sup>48</sup>*Ibid.* p. 45. A simple compression happens in parallel projections and in transformations that are hyperbolic rotations – which are the product of two compressions resulting in a series of parallel projections.

<sup>49</sup>It is an unfortunate name for the category, and constructs the impression that this system is the only projective one, when in fact all four of Hagen's pictorial systems are projective, as she herself points out.

<sup>50</sup>Margaret A. Hagen, *op. cit.*, p. 15. Horizon in the visual field is introspectively a line at which limits of scale, slant, and size are reached.

<sup>51</sup>Nenad Miscevic, "Intuition as a Second Window", *The Southern Journal of Philosophy*, 2000, Vol. XXXVIII, Supplement, p. 87-111. Although I am not working with his grid, it is still interesting to see how his idea of intuition is subdivided into a genealogy of intuition consisting of affective-cognitive ("hot") and purely cognitive ("cold"). This is further subdivided into abstract-conceptual, imaginative-procedural, and non-procedural.

<sup>52</sup>By 'in reverse', I mean that to navigate real space we also frequently need to compensate for false visual cues.

<sup>53</sup>Joseph S. Lappin, "Visible Information about Structure from Motion", William Epstein and Sheena Rogers (eds.), *op. cit.* p. 171-173. The space we see, and our understanding of it, is always contextual. For example, objects and surfaces are reference points that help to define how we apprehend the physical space. Different surfaces create different spaces. Cognitively speaking, for the viewer, different 'projective maps' from those surface spaces are transposed onto image space. As the viewer moves into the room, both surface space and image space are perceived as image spaces. The Ixion Room would originally have had furniture in it – three couches along the east, north, and south walls, with a circular or square table at centre as well as some small tables along the front end of the north wall as a food repository during dinner. The guests would have moved towards the centre of the room, and then have walked towards a couch to take their place for dinner.

<sup>54</sup>Sheena Rogers, *op. cit.* p. 120. Rogers proposes what is commonly put forward: that perception of visual space applies the same mechanisms as the perception of real space; in other words, that perceiving the real and depicted world are the same to perception.

<sup>55</sup>Stephen M. Kosslyn, *op. cit.* p. 387. Motion-added transformations arise when one alters an image object in a novel way, for instance by rotating, flipping, compacting and so on. Transformations occur when an image is generated on the basis of a previously seen moving object or scene. And visual-memory-based images are retained over time by repeatedly activating the appropriate representation in a pattern activation subsystem.

<sup>56</sup>Margaret A. Hagen, *op. cit.* p. 163. In these first pages, Hagen introduces the reader to the concepts underlying visual spatial perception and introduces Gibson's model of the *optic array*, upon which she elaborates. Visual information is grounded in light, which is both structure (the arrangement of the array of light), and information (specification of something). Not all information is used all the time. The effects of light requires context – surfaces or a layout of planes. Surfaces normally are not radiant; they reflect from other radiant sources – sunlight or candle-light, electric light, etc. Discontinuity and other limitations on light hitting the eye are specific to some change in surface – whether colour, slant or relative orientation, and each visual angle subtends its own size.



<sup>57</sup>Sheena Rogers, *op. cit.* p. 121, 155. Gibson stresses the ecological approach to perception and emphasizes the role of perception is in the control of actions. It is not the pictured world that performs the action, but the perceiver who makes evaluations and judgments in object qualities of surface, size, shape, distance, or actions relating to notions such as graspable, mountable and reachable. Rogers also points out that perceptual distortions are somehow frequently compensated, also giving Vermeer as an example. In the foreground of the *Music Lesson*, she notes, Vermeer hides distortions by draping a rug over the area that was spatially distorted.

<sup>58</sup>Anthony Pitson, "Perception Belief and Experience", *The Southern Journal of Philosophy*, Vol. XXVIII, No. 1, Spring 1990, p. 55-76. Pitson questions whether non-epistemic theorists can prove that specific perceptual experiences may occur independently of belief. And while he argues that experience is independent of belief, it does not itself amount to perception. The position of this thesis argues that experience without belief lacks intentionality and does not therefore add up to perception. He situates belief as an intimate part of both perception and conception – in fact at their point of conversion.

<sup>59</sup>P.M.S. Hacker, *Malcolm and Searle on "Intentional Mental States"*, *Philosophical Investigations*, vol. 15:3 July 1992, p. 247. Belief like fear, hope, desire, expectation and intention is a mental state. Philosophically Searl argues, Hacker writes, that intentional states are the condition of obtaining, to make a belief come true or an expectation fulfilled.

<sup>60</sup>Patricia Smith Churchland, *Neurophilosophy: towards a unified science of mind/brain*, Cambridge, Mass., MIT Press. 1995, p. 344.

<sup>61</sup>Daniel C. Dennett, *Consciousness Explained*, Boston, Little, Brown, 1991, p 131. Dennett asks the question, "How do we make sense of phenomenal space?" This is not really a space into which anything is literally projected, rather it becomes an entity, literally through and by belief alone. It is interesting for this thesis to contemplate two kinds of mental spaces, one about spatial location, and the other about the space for experience, or "experiential" space.

<sup>62</sup>Antonio R. Damasio, *op. cit.* p. 313-319. Damasio's interest in understanding primary structures for consciousness through first and second order mappings, is to find a way of articulating that whole realm of feelings that is experienced by the body is not articulated through words but very precise in its articulations through feelings of which the self is a part.

<sup>63</sup>Ben Saler, "On what we may believe about beliefs", *Religion in Mind: cognitive perspectives on religious belief, ritual, and experience*, Jensine Andresen (ed.), Cambridge, Cambridge University Press, 2001, p. 17-69.

<sup>64</sup>Anthony Pitson, "Perception, belief, and experience", *Southern Journal of Philosophy*, Vol. XXVIII, No. 1, Spring 1990, p. 55-76.

<sup>65</sup>Nycole Paquin, *op. cit. (Le Corps Juge)*, p. 27.

<sup>66</sup>Patricia Smith Churchland, *op. cit.* p. 334. What is meant by an utterance, depends precisely on the beliefs they hold. In other words utterance can be understood as belief content. The meaning of an expression for an individual plays on their internal representations and how in its economy it is related to sensory input or behavioral output.

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<sup>67</sup>Roger Smith, *A History of Human Sciences: scientific belief about human nature*, New York, W. W. North, 1997, p. 809. Konrad Lorenz advanced evolutionary epistemology with his theory centred on the idea that living organism encoded with their environments. This thinking initiated a new approach to the theory of knowledge.

<sup>68</sup>John D Barrow, *Between Inner Space and Outer Space*, New York, Oxford University Press, 1999, p 51. This chapter in his book takes a look at current arguments about the direction that Darwinism has taken and its relationship to evolutionary epistemology.

<sup>69</sup>Ben Saler, "On what we may believe about beliefs", Jensine Andresen, (ed.), *Religion in Mind: cognitive perspectives on religious belief, ritual, and experience*. Cambridge, Cambridge University Press, 2001, p. 47-69.

<sup>70</sup>Israel Sheffler, *In Praise of Cognitive Emotions*, New York, Routledge, 1991, p. 161.

<sup>71</sup>*Ibid.* 1991, p.162-3.

Charles Sanders Pierce presented his arguments in a paper from 1877, *The Fixation of Belief*

<sup>72</sup>*Ibid.* p. 163-4.

<sup>73</sup>John R. Searle, *The Rediscovery of the Mind*, Cambridge, Mass., MIT Press 1992, p. 175-195

<sup>74</sup>P.M.S.Hacker, *op. cit.* p. 247.

<sup>75</sup>Danielle C. Dennett, *Kinds of Minds: towards an understanding of consciousness*, New York: Basic Books 1998, p. 324.

<sup>76</sup>Ben Saler, "on what we may believe about beliefs", Jensine Andresen edit. *Religion in Mind, cognitive perspectives on religious belief, ritual, and experience*. Cambridge: Cambridge University Press, 2001, p. 51.

<sup>77</sup>Anthony Pitson, *op. cit.* p. 55-76

<sup>78</sup>Richard L. Gregory (ed.), *The Oxford Companion to the Mind*, Oxford, Oxford University Press, 1987, p. 598-601.

<sup>79</sup>Bernard J. Baars, *op. cit.* p. 86-89. Conscious concepts are always internally consistent, like perceptual experiences. They occur one after the other. However, when the mind is competing between very different conscious contents, they can only be dealt with one at a time. Similarly, visual images, or words in conscious perception, are always coherent even if the nervous system needs to cancel some input or suppress one thing for another. As in the visual system, one image will be suppressed for another. As in the figure-ground reversal or other illusions, one can only switch back and forth between them – one can never see both figure and ground simultaneously.

<sup>80</sup>Michael S. Gazzaniga, *The Mind's Past*, Berkeley, University of California Press, 1998, p. 71-72.

<sup>81</sup>Richard L. Gregory, *The Artful Eye*, p. 15. Richard Gregory speaks of perception as hypotheses, much like a scientific process, in that perception has to continue through data gaps predicting un-sensed properties of objects and immediate futures.

<sup>82</sup>*Ibid.* p. 122.

## END NOTES

## CHAPTER I

<sup>1</sup>Vitruvius, *Ten Books on Architecture*, M. H. Morgan (trans.), New York, Dover, 1960, c. 1914, p. 179. Vitruvius' book includes an illustration of the plan of the House of the Vettii, after Durm. A simplified plan of the House of the Vettii is included in John R. Clarke, *The Houses of Roman Italy 100 B.C.E - A.C.E. 250*, Berkeley, University of California Press, 1991, figure 120, p. 209; and in William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, UMI Dissertation Services, Ann Arbor, Michigan, 1981, fig. 151, p. 627.

<sup>2</sup>Paul Zanker, *Pompeii: public and private life*, Cambridge, Mass., Harvard University Press, 1998, p. 190, 202. Zanker analyzes the character of Pompeian fourth style wall decorations and ascribes the inspiration of wall decoration to the homes of the aristocrats of first century Rome. It was the ostentatious decor of the royal palaces, with their grandiose architecture and gardens, which inspire the architectural elements and landscape vistas of the fourth style Campagna painting. The elaborate decorative nature of Villa life, with mythological and other scenes decorated on the walls of their *pinacotheca* (galleries) was imitated by those who could afford it in Campagna. Zanker also remarks that freedmen, like the Vettii brothers, led the way in popularizing the decorative style, and also that the rules and regulations for public decoration projects set out by the Flavian emperors, who were sensitive to popular aspirations, were introduced as part of entertainment programs. Zanker writes about these aspirations as a desire *to imitate the decor of aristocrats' houses, to share their world, to participate in the good life and the happiness it brings-through the creation of illusions, if need be.*

<sup>3</sup>*Fauces* can be translated as 'jaws', and is allocated to a figure of speech or metaphor. Other translations are upper part of throat, gullet, pass, gorge. John C. Traupman, *The New College Latin and English Dictionary*, Philadelphia, Bantam Books, 1966, p. 113.

<sup>4</sup>William C. Archer, "The Paintings in the Aela of the Casa dei Vettii and a Definition of the Fourth Pompeian Style", *American Journal of Archeology* 94, 1990, p. 95-123. William C. Archer, "The Paintings of the Casa Dei Vettii in Pompeii", p. 105, footnote 73. Even though in the restorations of the house of the Vetti the tablium had been eliminated, it was clear from entering the *fauces* that the architecture directed one's gaze towards the very place that the tablium was positioned. This was confirmed by William C. Archer, who also in a footnote points out that the elimination of the tablium is unusual but not unique in Pompeii. Another example is the Casa di P. Vedius Siricus.

<sup>5</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 83-84. Archer indicates that the two great piers on which are painted the portraits of two male figures, perhaps the Vettii brothers, are the only original architectural features from the west side of the atrium, and seem to correspond to the original entrance to the tablium placed on the visual axis with the *fauces*.

<sup>6</sup> Vitruvius sets out in detail the appointment and decoration of rooms to suit the station of the owner of any given house. Vitruvius, *op.cit.* Chapter V, p. 181.

<sup>7</sup>The dimensions of the peristyle in the House of the Vettii are 17.82 x 28.08m. Following Vitruvius' advice, it should be one third longer than deep. The width of the walkway around the colonnade is approximately the width of the *fauces*, which is 2.4 x 2.8m, and the width of the doorway entering the peristyle is twice that. The tablium, according to Vitruvius, should be twice the width of the *fauces*. In the House of the Vettii, it seems that Vitruvius' prescriptions for the size and locations of rooms are respected. The proportions of the largest reception room (q) is the same as prescribed for the tablium – 5.88m x 8.94m – suggesting that the tablium used for receptions was substituted by this reception room.

<sup>8</sup>Measurements that I myself took of the *triclinium* 'p' are confirmed by William Archer and others. William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 41, 627.

<sup>9</sup>John R. Clarke, *op. cit.* p. 208-234. William C. Archer, *The Paintings in the Aela of the Casa dei Vetti and a Definition of the Fourth Pompeian Style*, p. 96.

<sup>10</sup>Lesley Adkins and Roy A. Adkins, *Handbook to Life in Ancient Rome*, Oxford, Oxford University Press, 1994, p. 356. During the republic and early empire, wax masks of the deceased were worn in public funeral and other processions by a family member who was also dressed in the garments of the deceased and acted as their representation. After the first century BCE, masks were also made from other material. Charles Garton, *Personal Aspects of the Roman Theatre*, Toronto, Hakkert Press, 1972, p. 10-11. In the beginning of theatrical records, the word mask or *prosopon*, became *persona*, a metaphor for the *human face* or mask. Pliny the Elder, trans. John F. Healy, *Natural History, a selection, Book XXXV, Painting, Sculpture and Architecture*, London, Penguin, 1991 p. 324. In the halls or atrium, portraits were objects to be admired. Pliny writes: "*they were not statues by foreign artists, not bronze, not marbles, but wax masks of members of their family displayed on individual urns so that their likeness might be carried in procession at family funerals. For invariably when someone died, all the members of the families had to be present. The family tree was traced by lines connecting the painted portraits*". Roman playwrights gave masks the characteristic of a particular *persona* to fit a certain emotive disposition. It was also assumed in theatre that a character might be portrayed with more than one mask.

<sup>11</sup>John R. Clarke, *op. cit.* p. 214.

<sup>12</sup>During the Augustinian era an aqueduct was built supplying water through a network of lead pipes that can still be seen in the houses of Pompeii and particularly clearly in the house of the Vettii today.

<sup>13</sup>My own site observations of the House of the Vettii confirmed the following: the spatial sub-ordering of a Roman house is determined by the location of rooms that face onto the central space of the atrium and *tablium*. Symmetrically on each side of the *fauces* or entrance are rooms serving as store-rooms, and a room for the porter who controlled the flow of *clientela*/clients and dependants of the *paterfamilias* coming into the house for daily salutations. Facing onto the atrium are a number of *cubiculum* or bedrooms or *diaeta* - daytime resting rooms and *alea*, small rooms that enter onto other room. In the house of the Vettii on the south-west side of the *Ixion* room is an *alea* with a small doorway that leads into this dining room. It was used primarily by the servants for bringing food and drink and servicing the guests in this dining room. Beyond and to the side of the atrium are the private quarters. As Clarkee points out, the fact that the *fauces*-atrium axis was never mentioned by Vitruvius as a particular feature was probably due to the fact that this relationship was so common that it was unremarkable.

<sup>14</sup>Paul Zanker, *op. cit.* p. 140. "In the first century BCE luxurious country estates referred to euphemistically as gardens (*horti*).<sup>14</sup> Their inclusions in the homes of the wealthy in the city had become the norm in Rome.

<sup>15</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 83.

<sup>16</sup>John R. Clarke, *op. cit.* p. 208, footnote 65. While this discrepancy became obvious to me during my own investigations of the site, Clarke in a footnote gives credit to Lise Bek for first remarking on the difference in her publication *Towards Paradise on Earth: Modern Space Conception in Architecture: A Creation of Renaissance Humanism*.

<sup>17</sup>John Barrow, *Between Inner and Outer Space*, Oxford, Oxford University Press, 1999, p. 145. Barrow writes: "It was important to see without being seen [...] The evaluation of environments was a crucial instinct for our distant ancestors-once, upon which their survival, and hence our existence, hinged". It is not difficult to appreciate how the outcome of this necessity over time integrated itself as an architectural feature in temples and in the case of Rome's social hierarchy became a featured also in its hybrid of business and domestic architecture.

<sup>18</sup>Sir Mortimer Wheeler, *Roman Art and Architecture*, London, Thames and Hudson, 1996, p. 128. Wheeler writes that on the island of Delos a Rhodian type of colonnaded courtyard in the Greek style was higher than the flanking porticos. This architectural proposition emphasized the importance of the inner-most room, which in effect Wheeler equates with the tablium of the Pompeian scheme.

<sup>19</sup>Andrew Wallace-Hadrill, *Houses and Society in Pompeii and Herculaneum*, Princeton, New Jersey, Princeton University Press, 1994, p. 6.

<sup>20</sup>John R. Clarke, *op. cit.* p. 7.

<sup>21</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 84. Archer points out that in the Casa dei Cervi at Herculaneum the atrium has become little more than an entrance lobby for the spacious *peristyle* garden and the rooms around it.

<sup>22</sup>D. Brendan Nagle, *The Ancient World; a social and cultural history*, New Jersey, Prentice Hall, 2002, p. 259-260.

<sup>23</sup>John R. Clarke, *op. cit.* p. 6-8. Clarke writes that the Etruscan circle of divination was a powerful tool adopted by Roman soothsayers, or *haruspices*. A circle divided into pie sections which represented four divine domains of celestial, terrestrial, nature and the underworld controlled by the appropriate deity.

<sup>24</sup>Andrew Wallace-Hadrill, *op. cit.* p. 44-46. Comparing the Roman house with the character of a Greek house, Wallace-Hadrill writes that the latter is concerned with creating a world of privacy that excludes the uninvited visitor, whereas the Roman house puts the occupants conspicuously on show. He also points out that when examining the allocation of spatial ordering in a Roman house, Vitruvius speaks of the 'invited' versus 'uninvited' sections where today we would speak of office area versus private or leisure.

<sup>25</sup>William C. Archer, *The Paintings in the Aelia of the Casa dei Vettii and a Definition of the Fourth Pompeian Style*, p. 95-123. Archer writes that the House of Vettii, due to the earthquake of 62 A.C.E., had undergone some minor architectural changes. However, it is also interesting to realize that this house was probably larger than originally built. A house could only expand in the *insula* by buying up the house next door. It seems therefore probable that for the Vettii's house, a plan was adapted to conform as closely as possible to the ideal Vitruvian plan.

<sup>26</sup>Vitruvius, *op. cit.* p. 179. Vitruvius writes that in the case of a reception room or *oeci*, the representations of the corinthian columns are single tiered and set on podiums. The *coronea* simulated either woodwork or stucco molding. A carved vaulted ceiling above the *coronea* would have simulated the open sky.

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<sup>27</sup>*Ibid.* p. 180-181.

<sup>28</sup>*Ibid.* p. 179-180.

<sup>29</sup>Peter Connolly and Hazel Dodge, *The Ancient City; life in classical Athens and Rome*, Oxford, Oxford University Press, 1998, p. 149. Describing the domestic habits of a Roman household, Connolly includes an inscription found on the wall of a Pompeian dining room that reiterates expectations by guests and hosts of the manners to be observed. They indicate that women were not banned from the dining room, as was the case in Athens. The inscription states, for instance, that one must not cast lustful glances at another man's wife – do not be coarse in your conversation and use of language – restrain from getting angry. It is also written that a slave must wash the feet of the guests and spread a linen cloth over the couches and cushions.

<sup>30</sup>See August Mau, *Die Geschichte der dekorativen Wandmalerei in Pompeji*, Leipzig, n.p., 1882. Mau, through careful observation, was able to observe stylistic changes in Pompeian wall decorations, which he categorized and organized into four distinct chronological stylistic phases.

<sup>31</sup>John R. Clark, *op. cit.* p. 34-41. Clarke describes the first style (according to Daniela Scagliarini) in which precious coloured marble or its imitation defined a continuous pictorial space that was in accord with the position of each wall. The second style on the other hand, through the illusion of perspective, is intended to coincide with the viewer's central position in a given space. However, the illusion collapses as the real architecture of the room overwhelms the illusion, for example in the case of the painted corner columns, where the two-dimensional schematic single vanishing point perspective conflicts with three-dimensional space. This, however, does not mean that all the wall decorations of the same room had the same single vanishing point. What Clarke refers to is the perspectival constructions of the columns. An awkward folding occurs, making particular demands on the viewer to suspend their belief. The third style's dominant characteristic was frontal flatness, both of walls and floor. Clarke speaks of the floor as a plane to be walked on, or the walls as a flat plane, where the illusion is reserved for individual central pictures and illusionary interventions in the upper zone of pavilion-like structures (theatre sets).

<sup>32</sup>J. Michael Walton, *The Greek Sense of Theatre*, Amsterdam, Harwood Academic Publishers, 1996, p. 31-37. The *skene* or scenic backdrop for the actors.

<sup>33</sup>Andrew Wallace-Hadrill, *op. cit.* p. 44. Wallace-Hadrill makes us aware that the idea of optically symmetrical as opposed to geometrically symmetrical is relevant here. Just as the primary axis of a Roman house is intended to exaggerate the depth of field for the viewer, this device is intending to produce the same effect in the context of a single room. Clarke, p. 50. The second style wall decorations done during the period when Vitruvius was writing, around 30 to 20 B.C.E., moved away from the early second style, which had established an earlier version of asymmetrical perspective towards the more symmetrical perspective so criticized by Vitruvius.

<sup>34</sup>The enumeration of the room in reference to its location in the House of the Vettii used here has been taken from John R. Clarke, *op. cit.* p. 209.

<sup>35</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 81-88. The disposition of the principle space of the Casa dei Vettii conforms to the canonical features of the Roman atrium – peristyle house with axial and bilateral symmetry. Its influence by Hellenistic trends, in which the open peristyle garden became an integral feature to the rear of the domus, signals a period of change in relationship to the classical layout of the *fauces* and principle atrium area. While it is impossible to exactly date the construction of the House of the Vettii, it is thought that the character of the stonework reveals that the part up to the peristyle can be dated to the second century B.C.E. The restoration after the earthquake of 62 A.C.E. makes it difficult to further identify precisely the history of more recent renovations.

<sup>36</sup>I observed from my calculations that the height would be in perfect proportions if the length were not a bit shorter than twice the width. I wonder if there was an inversion of figures at the time of the measurement and should read 3.32 m x 6.63m. These, added together, make 9.95m divided by two equals 4.95m a close average of the vaulted ceiling.

<sup>37</sup>Exterior doors opened onto the peristyle, and were secured by two vertical bolts; interior doors were fastened with a latch. William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 41.

<sup>38</sup>*Ibid.* p. 41.

<sup>39</sup>Canonical proportions of this dining room-*oecus* are within the rules of divine proportions. Vitruvius, *op. cit.* p. 179.

<sup>40</sup>Karl Schefold, *Die Wände Pompejis, Topographisches Verzeichnis der Bildmotive*, Berlin, Walter de Gruyter, 1957, p. 145-146. In the archeological plan of Pompeii, the House of the Vetti is located in region 5, sector 15, and numbered house 1 (V, 15, I). I have also added a number of details that appear neither in Schefold's nor in Archer's list. See Renate Thomas, *Die Dekorationssysteme der römischen Wandmalerei von augusteischer bis in trajanische Zeit*, Mainz, Phillip von Zabern, 1995, p. 117; Theodor Von Kraus, *Das Roemische Weltreich*, Rome, Deutsches Archaeologisches Institut, 1967, para. 132, p. 209. The detailed iconographic information of the mythological scenes I have gathered from various sources, among which are: Amedeo Maiuri, *Pompeian Wall Paintings*, Berne, Hallweg, 1972, plate no. XI; *Daedalus and Pasiphae*; Theo Wirth "Zum Bildprogramm der Raume N und P in der Casa Dei Vetti", *Mitteilung des Deutschen Archaeologischen Instituts Römische Mitteilungen*, 90, 1983, p. 449-455; and Ellen Schwinzer, *Schwebende Gruppen in Der Pompejanischen Wand Malerei*, Würzburg, Konrad Triltsch Verlag, 1979, p. 25-29 (Ixion Room: plate 12 & 13, p. 83-93), the latter particularly for the large white panels with floating figures on the north and south walls.

<sup>41</sup>John R. Clarke, *op. cit.* p. 373, 375. "The entablature [consists of] a horizontal structure carried by a colonnade, consisting of architrave, frieze and cornice." P", p. 375. "The architrave [consists of a] horizontal beam or lintel supported by the capitals of the columns; the lower member of the entablature.", p. 373.

<sup>42</sup>In the upper portion of the shaft, a group of figures – gods and giants in combat. William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 227.

<sup>43</sup>J. Michael Walton, *op. cit.* p. 38. Walton writes that Periclean theatre employed flexible-portable scenic facades which were placed on panels between the columns to which porticoes, pediments and roof platforms were added, depending on the particular needs. Peter C. Connolly and Hazel Dodge, in *The Ancient City*, goes so far as to suggest that we can get an impression of Roman theatre sets from Pompeian wall paintings. While he admits that they are not exact copies, he describes the theatrical backdrops as usually divided into three sections with a larger panel in the centre and two narrower panels at each side representing houses or other architectural features. These sections were divided by columns supporting the entablatures, and often pediments as well. While this might at first appear an accurate description of the primary visual resolution of the Ixion Room, the theatrical setting of the second style has been modified dramatically, with both the blue panels and the still life and seascape paintings that are positioned underneath the opening or window. Also, in the second style the openings on the side wings are not in the shape of windows, which is the case in the Ixion Room. It is important to understand that while the Greeks had portable stage elements, both two and three dimensional, as part of their stage sets, Roman stage sets by law also had to be portable until Pompey incorporated a temple to Venus at the top of the *cavea*, or seating arrangement, and described his theatre as a monumental stairway to the temple of *Venus Victoria*. From this time on, the stage configuration and scenography were to a large extent more permanent.

<sup>44</sup>John R. Clarke, *op. cit.* p. 227. Theatrical manner in Room 'e'.

<sup>45</sup>This colonette, with its blue-grey central shaft could be an olive tree. Athena was the goddess of Reason and patron of the arts and literature. The olive tree is her symbol of power over Poseidon (the underworld), having won the contest over him by making an olive tree grow. The twelve judges ruled in her favour over Poseidon's saltwater spring: Pierre Grimal, *The Dictionary of Classical Mythology*, trans. A.R. Maxwell-Hyslop, Oxford, Blackwell Reference, 1987, p. 67.

<sup>46</sup>*Ibid.* p. 67. Athena was in charge of building ships and she was their patron. To include her would not be too surprising, since Pompeii was a port city.

<sup>47</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 228.

<sup>48</sup>Pierre G. Guzzo and Antonio Ambrosio, *Pompeii*, Naples, Electa, 1998, p. 11. A good reproduction of the naval battle shows the two different types of ship, to be identified as having very different designs, especially at the bow and stern.

<sup>49</sup>Stephano Caro, ed., *Still lifes from Pompeii*, Naples, Soprintendenza archeologica di napoli e caserta, 1999, p. 12. Seventeenth-century genre of still life painting in Europe was inspired by classical still life examples. Caro connects these still lifes to the verse epigrams of the poet Martial: Martial, *Epigrams*, Volume III, D.R. Shackelton Bailey (ed. & trans.), Cambridge, Mass., Harvard University Press, 1993, p. 28.

<sup>50</sup>In Pompeii, some windows or openings existed, for example in the kitchens, and the *trepidarium* forming part of the Forum's baths had even been glazed. Roman houses had tiny windows, and glass was primarily used in wealthy apartments or houses. Otherwise, formal window coverings were barred grills made of either iron or terracotta and closed with shutters. The window-like representations in the Ixion Room are neither barred nor shuttered, possibly suggesting that the representation of window-like openings was a pictorial device to extend the space of the room as well as to suggest light infiltrating the room. Peter Connolly and Hazel Dodge, *op. cit.* p. 49, 143.

<sup>51</sup>Leslie Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, Oxford, Oxford University Press, 1996, p. 178-179.



<sup>52</sup>These architectural features will be taken up in more detail in other sections of this chapter.

<sup>53</sup>Charles Singer, *A Short History of Anatomy, from the Greeks to Harvey*, New York, Dover, 1926, p. 22. The pedimented edge, whether appearing on roofs or, as in this case, on a vertical white panel, always refers back to the measurement of the fathom and the foot, and can be understood as the triangulation of the superior section of the body that accommodated the head, while the width accommodated the outstretched arms. This was also always associated with a religious or sacred context.

<sup>54</sup>Barbara G. Walker. *The Woman's Encyclopedia of Myths and Secrets*, New York, Harper Row, 1983, p. 514. Demeter, Mother Earth, the Roman goddess Ceres: her origin is evident in such words as cereal, corn, kernel. Ceres' or Kore's, resurrection represents the seasonal return of vegetation.

<sup>55</sup>Richard Sennett, *Flesh and Stone*, New York, Norton and Company, 1994, p. 51-65. Sennet discusses the Greek concept of nudity as an important aspect of male virility.

<sup>56</sup>Hermaphroditus was the handsome son of Hermes and Aphrodites until the nymph Salmacis fell in love with him and asked the gods to join them forever. Hermaphroditus in this way had both male and female attributes, and is frequently represented as a follower of Dionysus. Pierre Grimal, *op. cit.* p. 209.

<sup>57</sup>John R. Clark, *op. cit.* p. 373. An *aedicula* (-ae) is a pavilion-like structure modeled on a temple front but used by itself, or to frame a picture or figure. The *aedicula* is also marked by a pedimented roof that is the sign of the temple.

<sup>58</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 75. A reconstruction of Phidias' statue of Athena includes a relatively wide base or pedestal on which she stood.

<sup>59</sup>Pierre Grimal, *op. cit.* p. 259.

<sup>60</sup>William C. Archer, *The Paintings of the Casa Dei Vettii in Pompeii*, p. 235.

<sup>61</sup>Pierre Grimal, *op. cit.* p. 47-51. Augustus took Apollo as his personal guardian, and credited him with his naval victory of 31 B.C.E. (see Anthony and Cleopatra).

<sup>62</sup>Barbara G. Walker, *op. cit.* p. 773.

<sup>63</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 154. Maenads dancing with a thyrsos, or large cone-shaped thistle-like plant.

<sup>64</sup>Pierre Grimal, *op. cit.*, p. 50 and Peter Connolly and Hazel Dodge, *op. cit.*, p. 153. When the Roman bride arrived at her new home, the torch was thrown away. Whoever caught it was promised a long life.

<sup>65</sup>An *exedra* (ae-) can be either a rectangular or semicircular room fully open on one side and usually located on the peristyle. John R. Clarke, *op. cit.* p. 375.

<sup>66</sup>Pierre Grimal, *op. cit.* p. 241.

<sup>67</sup>John R. Searle, *The Rediscovery of the Mind*, Cambridge, Mass., MIT Press, 1992, p. 78-82, 189. Searle suggests that intentional states, when they are intrinsic, respond to some bodily necessity. It can be a physical need, like food, or a personal need, like making a choice, or a social need as in making a judgment – and is associated with subjective conscious mental states. Intentionality is necessary if we want to move from unconscious perceptual states to conscious conceptual states. "All conscious intentionality – all thought, perception, understanding, etc. – determines the conditions of satisfaction only relative to a set of capacities that are not and could not be part of that very conscious state. The actual content by itself is insufficient to determine the conditions of satisfaction. Also see Nycole Paquin, *Le Corps Juge; science de la cognition et esthétique des arts visuels*, Montréal, XYZ éditeur, 1997, p. 181-188.

<sup>68</sup>John C. Baird, *Sensation and Judgment; complementary theory of psychophysics*, New Jersey, Lawrence Erlbaum Associates, 1997, p. 309; Also Richard Gregory, John Harris, Priscilla Heard, David Rose (eds.), *The Artful Eye*, Oxford, Oxford University Press, 1995, p. 11. According to Gregory, only sensory signals from eyes and other sense organs are understood as bottom-up. Perceptual knowledge permits us to read non-optical characteristics from optical features. Conceptual knowledge or top-down is all we think we know.

<sup>69</sup>Nycole Paquin, *op. cit.* p. 90.

<sup>70</sup>Problems in perceptual organization, or matching input to stored representations in the pattern activation subsystems, can cause perception to be flawed, but leave imagery relatively intact. Stephen M. Kosslyn, *Image and Brain*, Cambridge, Mass., MIT Press, 1994, p. 329.

<sup>71</sup>Roger Ling, *Roman Painting*, Cambridge, Mass., Cambridge University Press, 1991, p. 212-222. The section is on painters and patrons.

<sup>72</sup>*Ibid.* p. 220.

<sup>73</sup>Renate Thomas researched the decorative schemes of Roman painting and found no absolute evidence for the existence of pattern books as such, other than some repetitive over-all wall patterns and similarities in a number of mythological scenes. Renate Thomas, *Die Dekorationssysteme der römischen Wandmalerei von augusteischer bis in trajanische Zeit*, p. 113-129.

<sup>74</sup>In Roman art (because of the ambiguity of the pictorial space), many pictures show only one pair of a set of parallel edges, and hide the corresponding set. Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, Cambridge, Mass., Cambridge University Press, 1986, p. 264.

<sup>75</sup>Suspension of belief is possible because, according to Salmond, we can be of two minds. It is possible to simultaneously doubt something while also still believing it. However this state is not invested in the classical model of logic. Five possible belief states exist. Belief, disbelief, failure to believe, failure to disbelieve, suspension of judgment, and suspension of belief. When considering the decoration of the Ixion Room, all of these play a role at different stages of the viewers' perceptual experience in their reception of the wall decorations. Nathan Salmon, "Being in Two Minds; belief with doubt", *Nous*, 29:1, no. 1, March, 1995, p. 1-20.

<sup>76</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 40-41.

<sup>77</sup>Rogers has a reference to Sedgewick (1973) who identified the horizon as the basis for a series of optic array relations between horizon and the projection in the optic array. Sedgewick also defined this relationship with respect to linear perspective. It is important to understand whether the information provided is available in static or moving, monocular or binocular viewing conditions. Some structures might be limited to the transforming arrays and others might be present in both or only binocular or monocular, or frozen. It is likely that the pictorial invariants are more restrained than their "real" counterparts. Sheena Rogers, "Perceiving Pictorial Space", William Epstein and Sheena Rogers (eds.), *Perception of Space and Motion*, San Diego, Academic Press, 1996, p. 122-124.

<sup>78</sup>Sheena Rogers, *op. cit.* p. 122-127. Having a cue for the horizon enables the viewer more directly to scale a picture, namely the perceptual layout in pictures and the perception of spatial layout of the original scene, which includes depth perception. Eye height or eye level is a problem unless it is related to the station point of the viewer.

<sup>79</sup>Vitruvius, *op. cit.* p. 73-74. Vitruvius reminds us that the ideal height of a Roman was six Roman feet. However, that was calculated according to a man positioned within the Vitruvian Circle with outstretched arms. This means that the navel is at the centre, but one sixth of the total height is above the head. In order to calculate the real height, one sixth or one foot has to be subtracted, plus the amount above the eyes, to get a proper reading of the ideal eye level of a Roman. According to Lesley Adkins and Roy C. Adkins, *Handbook to Life in Ancient Rome*, p. 313, a Roman foot equals 297 mm or 11.7 inches.

<sup>80</sup>In chapter 1, figure 1.80 shows the bottom of the *Ixion* panel which would be at the average Roman eyelevel.

<sup>81</sup>Ralph Norman Harber, "Perceiving Space from Pictures", Margaret A. Hagen (ed.), *The Perception of Pictures*, Academic Press, New York, 1980, Volume 1, Chapter 1, p. 26-27.

<sup>82</sup>Nycole Paquin, *op. cit.* p. 227. According to the author, the body's relationship to the world, namely verticality, horizontality, in front, behind, left, right, can be seen as universal co-ordinates. The body orients itself and engages in exploring any place through these co-ordinates in which the objects around it participate in aiding virtual spatial judgment. It is also important not to exclude the body's specific condition, for example old age and unique environments – like water when diving. These are all factors that contribute to the perceptual experience of orientation. These also include the subjective experience of locomotion, the adaptation of posture to each new situation, and the orientation of the body.

<sup>83</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 40.

<sup>84</sup>The horizon is an important reference in the optic array. The earth's horizon, due to its curvature, is not absolutely the true horizon, nor is it truly infinitely distant. Nevertheless, it is relatively close. It is the metric or measure from the ground therefore that intersection between the ground and any object that intersects with the horizon staying at a constant height. In a picture the height of the point of observation is not always definable; however, any object that is present in the scene can with its relative size, identify the horizon-ratio relations. Sheena Rogers, *op. cit.* p. 125.

<sup>85</sup>Roger Penrose, "Mathematics of the Impossible", Gregory and collaborators (eds.), *op. cit.* p. 324-334. Generally the size inconsistency illusion (e.g. employed by M.C. Escher) is a part of an apparently continuous surface where a potential scale change occurs through insertion of a different size object which is scaled to appear the same size as the rest of the objects. In fact, it compensates for distance from the viewer, and so perceptually appears to be of the same size.

<sup>86</sup>Stephen M. Kosslyn, *op. cit.* p. 386.

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<sup>87</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p.178-188. Shape invariants perceptually define the position of the producer in relation to the subject, and become cohesive in the hierarchy of metric mappings to projective mappings where fewer and fewer invariants are preserved. The question as to how much an artist can demonstrate about persistent properties of objects and scenes is defined by this mapping option. However, when including – as in this case – the goat, two different sets of pictorial scales are simultaneously at play. One scale is closer to the metric measure relationship of shelves, objects and table, while the other becomes incorporated – like pictographic information.

<sup>88</sup>The author states that an observer's judgment about a depicted scene does not accurately match a real scene; real scenes are usually also underestimated. Sheena Rogers, *op. cit.* p. 123-127.

<sup>89</sup>Texture gradients, even abstract texture gradients, give the same spatial depth information. Ronald G. Boothe, *Perception of the Visual Environment*, New York, Springer Verlag, 2002, p. 291.

<sup>90</sup>Sheena Rogers, *op. cit.* p. 123.

<sup>91</sup>Ronald G. Boothe, *op. cit.* p. 291. He gives the example of a ground texture in a photograph, suggesting that the size change and spatial distance-spacing of the gravel forms a grid in that that which is closer is spaced wider than that which is further, which becomes denser and smaller in size – which accounts for it seeming further away.

<sup>92</sup>*Ibid.* p. 249. Boothe writes that an occlusion can simply mean that one figure as silhouette sits in front of another figure, occluding its total visibility. An occluding contour can imply that the object being seen is three-dimensional. Without the presence of a second plane that articulates its volumetric dimension there is depending on the contour the possibility of producing a sensation of concavity.

<sup>93</sup>Patrick Péruch and Evguéni A. Lapin, "Route Knowledge in Different Spatial Frames of Reference", *Acta Psychologica*, 84, 1993, p. 253-269.

<sup>94</sup>John Campbell, *Past, Space, and Self*, Cambridge, Mass., M.I.T. Press, 1994, p. 7-356: Chapter 1: *Frames of reference*. Campbell discusses the apprehension of the first person – self consciousness and one's ability to think about the spatial environment and one's place in it in the context of moving forward and backward, as well as the ability to orientate oneself in a temporal frame of reference.

<sup>95</sup>Patricia Smith Churchland, *Neurophilosophy: towards a unified science of the mind/brain*, Cambridge, Mass., MIT Press, 1995, p. 250. Churchland writes that C.S. Pierce (1839-1914) proposes that the frame problem is the solution to being faced with too many possibilities or hypothesis to be tried, saving only those that seem plausible based on empirical evidence. While this hypothesis is based on the idea of reduction, it can hardly be said that the *Ixion* Room is minimal since it is, rather, pluralistic in its pictorial representations. Perhaps one might see it as an instance where thinking in psychological theory crosses over with thinking in neurophysiological theory, and framing is a way of separating different emotive states, of which each pictorial space can be said to be a part.

<sup>96</sup>Mechanisms of intentionality reinforce neuronal activities, which respond to a hierarchy of nervous discharges. Nycole Paquin, *op. cit.* p. 190.

<sup>97</sup>Joseph S. Lappin, "Visible Information about Structure from Motion", William Epstein and Sheena Rogers (eds.), *op. cit.* p. 172-174.

<sup>98</sup>Sheena Rogers, *op. cit.* p.134. Rogers writes that the fact that the viewer does not question every pictorial distortion that occurs with their shift in position with respect to the object being viewed is grounded in the assumptions stemming from systems of belief, and – as has been suggested in the compensation hypothesis – is an instance of the observer correcting the distortions produced, or that the distortions are minimal and some of the pictorial information is unaffected, even if the observer shifts their position. Also, judgment of the virtual space may be affected by the perceived distortions.

<sup>99</sup>Colour is treated in this section not for its potential metaphoric value, but rather for its perceptual properties that can inform us about pictorial space. As Nycole Paquin emphasizes, pigments in themselves have no predetermined value and any metaphoric value exists outside of the image. Nycole Paquin, *op. cit.* p 243,

<sup>100</sup>David Rose, “A Portrait of the Brain”, Richard Gregory and collaborators (eds.), *op. cit.* p. 37-39. Empirical evidence (Indow, 1991) shows that the degree of distortion varies with the background context in the visual scene, becoming more Euclidean as complexity and “naturalness” of scene increases: the visual field is focused on the retina, resulting in a distorted upside down image. From here nerve cells convey information (lateral geniculate nucleus or LGN) and passes to particular part of primary visual cortex. From here they become finer fuzzy topological maps. These maps feed into two different higher-level streams, one which defines the location – where the object is feeding it into the mechanism of how to move the body in relation to the object, and one which moves into the *inferotemporal* cortex (lower region of temporal lobe), where it is determined what the object is. Cues are linear perspective, aerial haze, colour, contrast, stereopsis, motion parallax, shape from shading, etc. (Gregory, 1990). Ramachandran argued that the more cues that are present, the more precisely distance in a picture can be estimated.

<sup>101</sup>Sheena Rogers, *op. cit.* p. 131.

<sup>102</sup>Stephen M. Kosslyn, *op. cit.* p. 387. The author writes that there is an underlying shape-shift subsystem that modifies spatial representations in spatio-topic mapping sub-systems and makes corresponding changes to the mapping functions from pattern activation sub systems. The instructions for the shape-shift subsystem often comes from motor programming subsystems through an encoding of the input that results in an action.

<sup>103</sup>Antonio Damasio, *The Feeling of What Happens; body and emotion in the making of consciousness*, New York, Harcourt Brace, 1999, p. 321. Damasio, on the problem of consciousness, questions the use of the word ‘representation’ since it simply means a pattern that is consistently related to something. Traditionally, it is thought that neural patterns make representations in the mind and in the brain with some degree of fidelity to the object to which the representation refers; yet the image we see is based on changes which occur in our organism. The signaling devices in our whole body – skin, retina, muscles – construct neural patterns according to the brain’s own convention, and are transiently conceived in the multiple sensory motor regions of the brain.

<sup>104</sup>*Ibid.* p 321-322. Damasio suggests that images are mapped when photons or light strike the retina in a particular pattern related to the object, creating transient neural maps at subsequent levels of the nervous system. Related maps are also subsequently formed in the visual cortices: there are corresponding patterns between what is mapped and what is being mapped. But the correspondence here is not point-to-point, and for this reason the map does not have to be faithful. Therefore the brain, rather than strictly mirroring the environment around us, constructs maps of the environment using its own parameters and internal design, thus creating a world specific to each class of brains (e.g. amphibians, mammals, etc.). Paquin agrees with Damasio, and redefines the nature of the aesthetic interpretation of an image through applying the biology of the body.

<sup>105</sup>Jason S. McCarley and Zijiang J. He, "Assymetry in 3D perceptual organization: ground-like surface superior to ceiling-like surface". *Perception and Psychophysics*, 2000, 62 (3), p. 540-549; Stephen M. Kosslyn, *op. cit.* p. 336. According to the article, Pinker and Fink (1980) found that subjects are capable of imagining the appearance of three-dimensional scenes even if they are viewed from novel perspectives and Finke (1988) showed that the subject could mentally arrange geometric patterns to form recognizable patterns that were not easily anticipated on the basis of the parts themselves.

<sup>106</sup>Hagen clearly emphasizes the significance of geometric patterns. Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 6, 323.

<sup>107</sup>*Ibid.* p. 83, 100-101, 283. Hagen's intention is to show that general and specific pictorial content is based on common perceptual content – a certain commonality of the visual experience that she describes by the different geometrical structures available in *natural perspective*. Natural perspective refers here to the theory of the *optic array* from an environment to a point of observation, and is not the same thing as artificial perspective, which is the projection on a transparent picture plane to a station point. Because representations are evaluated within a cultural context, it is often thought that they are primarily artifactual, (Marx Wartofsky, 1980). But Hagen argues that while the selection from representational options of natural perspective – such as bias, preference, value, or function – is determined by cultural conventions, the option itself is not. Therefore, the constraints that determine the kind of pictorial mappings of texture, edges, and surfaces in the context of various perspectival projective possibilities reflect cultural perceptual biases.

<sup>108</sup>*Ibid.* p. 265. Hagen believes that the lack of a singular perspectival proposition in Roman painting, marked by the lack of a single vanishing point, is the result of combining multiple viewpoints into one picture. From a contemporary position, we measure the deviations from what we have accepted as the norm. My thesis adds to Hagen's conclusion by analyzing step-by-step how in the Ixion Room the multiple views are motivated and constructed.

<sup>109</sup>*Ibid.* p. 45. Hagen notes that a simple compression happens in parallel projections and in transformations that are hyperbolic rotations – which are the product of two compressions resulting in a series of parallel projections.

<sup>110</sup>It is an unfortunate name for the category, and constructs the impression that this system is the only projective one, when in fact all four of Hagen's pictorial systems are projective, as she herself points out.

<sup>111</sup>Vitruvius, *op. cit.* p. 213, 215-221.

<sup>112</sup>Harvey Richard Schiffman, *Sensation and Perception: an integrated approach*, New York, John Wiley, 1996, p. 113-135.

<sup>113</sup>Colwyn Trevarthen, "Mother and Baby: seeing artfully eye to eye", Richard Gregory and collaborators (eds.), *op. cit.* p. 190 – 191.

<sup>114</sup>*Ibid.* p. 188 – 189.

<sup>115</sup> Semir Zeki, *Inner Vision: an exploration of art and the brain*, London, Oxford University Press, 1999, p. 76-78.

<sup>116</sup> Stephen M. Kosslyn, *Image and Brain*, Cambridge, Mass., MIT Press, 1994, p. 266.

<sup>117</sup> Colwyn Trevarthen, *op. cit.*, Richard Gregory and collaborators (eds.), *op. cit.* p. 189.

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<sup>118</sup>A strong horizontal axis is the easiest to organize because of the implied horizon line. Stephen M. Kosslyn, *op. cit.* p. 133.

<sup>119</sup>Patricia Smith Churchland, *op. cit.* p. 121.

<sup>120</sup>*Ibid.* p. 119-120. According to Churchland, it seems that the process of topographic mapping is the general principle by which the nervous system organized itself. The spatial relations on the retina are preserved in the spatial organization of the neurons we organize (p. 113). Retinal ganglion cells divide into three types, each having distinctive receptive field properties, conduction, velocities and originating locations on the retina, and each also having distinctive projective patterns.

<sup>121</sup>Stereoscopic depth perception is important in fine depth perception. This is accomplished by matching a pair of stimuli in two eyes. As objects change positions, the new distance is analyzed by the difference of the image in each eye – relative stereopsis. David Rose, *op. cit.* Richard Gregory and collaborators, (eds.), *op. cit.* p. 29, 39.

<sup>122</sup>Patricia Smith Churchland, *op. cit.* p. 120-121.

<sup>123</sup>Julian Hochberg, “The Representation of Things and People”, E.H. Gombrich, Julian Hochberg, Max Black (eds.), *Art, Perception, and Reality*, Baltimore, John Hopkins University Press, 1970, p. 70.

<sup>124</sup>Sheena Rogers, *op. cit.* p.137.

<sup>125</sup>*Ibid.* p. 133-158. According to Rogers, the optic array that is projected from the picture to the eye or eyes of the observer is rarely identical to the observed scene. Systemic distortions are introduced with each change of viewpoint consistent with three-D layout of surfaces of the virtual space of pictures. Most of the time, viewers are not aware of these distortions. This is an aspect of the robustness of perspective. There are then two different ideas here: the perceptual distortion noticed, and the perceptual distortion that occurs because of the transformations that occur in the optic array. There is the compensation hypothesis, suggesting that we automatically compensate up to a point, that the minimal distortions we just do not notice, that some information is unaffected-invariant by ordinary viewing away from the station point, or that distortions of virtual space of the picture are perceived and affect our judgment about the depicted layout. The conclusion, based on the geometry and empirical evidence, indicates that some parts of a depicted scene distort more than others; and that the degree changes, and increases and decreases, with the movement of the observer. Yet judgments about the relative position of objects seem to remain constant. Orientation judgments are explicitly observer-relative. Rogers concludes that pictures are full of ambiguity that is constrained and crafted to reflect an appropriate reality at any given moment because there is no evidence that the viewer engages in a thought-like process in which they compensate by imposing assumptions about surfaces to correct pictorial space, and any compensations are made by the artist – the first viewer.

<sup>126</sup>Richard Gregory, “Black Box of Artful Vision”, Richard Gregory and collaborators (eds.), *op. cit.* p. 15.

<sup>127</sup>J. M. Hinton, “Sense-experiences Revisited”, *Philosophical Investigations*, 19:3, July 1996, p. 215-235.

<sup>128</sup>Memory Systems are separated from one another. In working memory the audio and visio-spatial codes are separated, but – interestingly – memory images, for example in letters that are visually similar when remembered, are sometimes confused with similar sounding letters instead. In other words, while Q and G are visually similar, they can be confused in memory with t and g as sounding more similar. Because there are also both short and long-term memory, short term memory fills in the gaps of long term memory. Implicit memory refers to memory to which we have no conscious access. Michael S. Gazzaniga, Richard B. Ivry, George R. Magnum, *Cognitive Neuroscience Biology of the Mind*, New York, W.W. Norton, 1998, p. 247, 256-261.

<sup>129</sup>Michael S. Gazzaniga, *Mind's Past*, Berkeley, University of California Press, 1998, p. 69-73. Gazzaniga found that applying a stimulus directly to the cortex and another one to the skin of the subject, a long time misconception has been rectified. The cortex, as it turns out, receives the information directly and therefore first. Everyone has thought that the skin stimulus was actually received first. [...] Therefore before, for example, we are aware of thinking about moving our arm, your brain is at work preparing to make that movement [...]. We respond not to the firing of our brain, but to the information the brain is feeding back to us, and that tells us that it is the world that our brain constructs, and not the question of whether the brain and the world are the same.

<sup>130</sup>*Ibid.* p. 75. Gazzaniga observes that many experiments have proven that the brain responds to perceptions and organizes them before we are aware of it.

<sup>131</sup>Ralph Norman Harber, *op. cit.* Margaret A. Hagen (ed.), *Perception of Pictures; Volume I: Alberti's Window*, New York, Academic Press, 1980, p. 21-29.

<sup>132</sup>Sheena Rogers, *op. cit.* p. 153. Orientation and spatial layout were judged in the same picture. It would seem that only orientation varied, while the spatial layout barely varied at all.

<sup>133</sup>*Ibid.* p. 147- 151. Rogers notes (Meister, 1966) that moviegoers will not notice distortions if they are seated within 22 degrees of the perpendicular. Rotating or rectangular objects at 22.5 degrees were equally constant. However, a noticeable distortion occurs when the viewing angle occurred at 45 or more degrees.

<sup>134</sup>*Ibid.* p. 281.

<sup>135</sup>Bernard J. Baars, *In the Theatre of Consciousness; the workspace of the mind*, New York, Oxford University Press, 1997, p. 89-90. Baars notes that ideas and sensation share many of the same basic features in the mind. When they are not consistent with each other, they will compete against each other for access to consciousness. Ideas and sensations seem like two different experiences that make use of the same mental faculty of consciousness.

<sup>136</sup>David Rose, *op. cit.* Richard Gregory and collaborators (eds.), *op. cit.* p. 39. Rose writes that as an object varies in distance, the relative location of its images in each eye will change. (Assuming constant eye position.) This cue can be used to determine distance by analyzing the differences between the images in the two eyes.

<sup>137</sup>*Ibid.* p. 38-39. According to Rose, in order for us to experience depth as a precise assessment, it is preferable to have as many distance cues as possible to a visual scene. For example, linear perspective, aerial haze, colour and contrast, stereopsis, motion parallax, shape from shading. The more of these distance cues that work together, the more precise is the evaluation. Colour and motion are among others that also benefit from multiple input. Depth can be signaled by motion parallax, or by cues extracted from coloured lines, orientation lines, motion, texture or luminance.



<sup>138</sup>Shui-I Shih, "Recall of Two Visual Targets Embedded in RSVP Streams of Distractors Depends on their Temporal and Spatial Relations", *Psychology & Psychophysics*, 2000, vol., 62 (7), p. 1348-1355. Shih examined the temporal and spatial relationship between two visual targets, and found that a processing limitation in an earlier perceptual stage like fovea versus peripheral retina area contributed to short term memory because they compete for space-dependant processing resources.

<sup>139</sup>Altering the orientation of an object can change the nature of the input that is matched to stored representations, and depending on how the figure is organized, the input may or may not be matched. Stephen M. Kosslyn, *op. cit.* p.127-132.

<sup>140</sup>Victoria Finlay, *Colour: travels through the paint box*, London, Sceptra Books, 2002, p.180. It was believed according to Pliny, that cinnabar was the result battle for supremacy, between the dragon and the elephant. As the elephant fell, it crushed the dragon and their blood merged in their deaths. The resulting colour became known as cinnabar.

<sup>141</sup>[...] The actors spoke one at a time, but the physical presentation was multiple and encompassed anyone else present who could hear and might be affected. This is the basis of the triangular scene used to such an extent by Sophocles, in which a single pronouncement produces contrasting reactions in two listeners. This sense of action and reaction is considered against the chorus, able to act and react both as individual and in a corporate identity, or as a mirror of mood [...]. J. Michael Walton, *op. cit.* p. 53.

<sup>142</sup>Richard Latto, "The Brain of the Beholder", Richard Gregory and collaborators (eds.), *op. cit.* p. 66-91. Latto writes that form is effective because it relates to the properties of the human visual system (a term coined by Latto is 'aesthetic primitive/ primary'). Visual perception of both artist and scientist are patterns, lines, geometrical shapes, stylized organic forms, human body, human face, human hand, landscape features, stick men, monochrome blocks. Some combinations are aesthetically moving not because they reflect the properties of the world, but because they reflect the properties that our brains evolved to construct representations of the particular world we live in. The pictorial forms, with the transformation of the retinal image by visual systems, is a process involving the artist's mimicking and elaborating these transformation to produce their effect. What they have in common is selection from infinite possibilities. The visual system with all our senses provides very selective information about the external world. This is counterintuitive – we are in fact not aware of the limitations of our perceptions (unless we become disabled); we are constantly mapping the boundaries of the visual field. By adjusting stimuli, we can determine the boundaries of our perceptual space, size, wave-length, intensity and movement – defining limits to our sensory capacity. Despite all our limitations, we experience the world as complete and whole.

<sup>143</sup>Aristotle, *The Basic Works*, Richard McKeon (trans.), New York, Random House, 1941, p. 1456. Chapter 1 of "De Poetica", line 1448a: "*The objects the imitator represents are actions, with agents who are necessarily good men or bad-the diversities of human character being nearly always derivative from this primary distinction since this line between virtue and vice is one dividing the whole of mankind.*" This, Aristotle believes, is true of all forms of artistic representations that include human nature – speaking one moment in narrative, at another assuming the character, or representing the whole story through actions of something that might at another moment be described. And Aristotle speaks of the difference between them as their *means, their objects, and their manner.*

<sup>144</sup>Victoria Finlay, *op. cit.* p. 180.

<sup>145</sup>Parallel plane projection does not touch directly on relative orientations of object and image surfaces, nor on the distance of the station point or projection lines. There is a tendency towards frontal, metric, object surface projections. Because this neat kind of arrangement is usually a fabrication, it also has no single station-point for the viewer, and therefore is considered for a multiple-viewer position. In the case of the image of Ixion, it would be seen by diners from both the north and south side of the room. Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 250.

<sup>146</sup>*Ibid.* p. 252. The oblique projection of the throne and the wheel, both close to the edge of the mythological scene, permit the viewer from each side of the room to enter this pictorial space at centre, which is stratified into receding planes.

<sup>147</sup>Zeus turned Hera, who was being pursued and seduced by Ixion, into a phantom cloud in the image of Hera. Pierre Grimal, *op. cit.* p. 240.

<sup>148</sup>Karl Schefold, *op. cit.* p.145. William C. Archer, *The Paintings of the Casa Vetii in Pompeii*, p. 401-405.

<sup>149</sup>E.H. Gombrich, *Shadows; the depiction of cast shadows in western art*, London, National Gallery, 1995, p. 18-21. Cast shadows in the history of painting begin with theatre sets, named *skiagraphia* or shadow painting. In Greek and Roman painting, illusionistic painting implied the modeling of forms by the use of light and shade. Not unlike some Italian renaissance painters, the Roman painter used the minimum amount of shade to model their form.

<sup>150</sup>Richard Latta, *op. cit.* p. 73. The luminance effect has been observed and applied by artists – Latta cites the pointalist George Seurat among others.

<sup>151</sup>The visual narrative that exists with the reading of the Ixion picture reads like a book from left to right, and begins with Ixion on the wheel of fire with the next image being Hepheastus, god of fire, and then moves over to Hermes, the messenger of Ixion's fate, and the phantom Nephele, who occupies the lowest position, with the elevated will of heaven on the right side as the conclusion. While this can be simply read as a moralistic metaphor, or punishment of cause and effect, the dispositions of the characters have a deeper meaning. Bernard J. Baars, *op. cit.* p. 52.

<sup>152</sup>*Ibid.* p. 59.

<sup>153</sup>*Ibid.* p. 81, 83. "concrete sensory meaning can live side by side with the abstract one, and the result is not confusion but a fine tool for thinking clearly."

<sup>154</sup>*Ibid.* p. 93.

<sup>155</sup>Stephen M. Kosslyn, *op. cit.* p. 7.

<sup>156</sup>Jacques Aumont, *The Image*, Claire Pajackowska (trans.), London, British Film Institute, 1994, p. 56-57. In section 1.2, the author analyzes how the spectator constructs the image, and vice versa. He paraphrases Gombrich, who states that because recognition depends on stored remembered object-forms and spatial composition, perceptual constancy is founded on perceptual comparison between what we see and what we know or have already seen. Memory depends on finding visual constancies, and these therefore play an important role in the recognition of a face.

<sup>157</sup>*Ibid.* p. 56-57. Episodic memory depends not only on the retrieval of items, but also on its ability to cohere it with spatial position information, a time-based recall process. Each separate scene, once scanned, is not lost to us but remains in memory, which is coded in the case of a pictorial image, not isolated from the pictorial space, which also contributes in generating meaning for it.

<sup>158</sup>Bernard J. Baars, *op. cit.* p. 93.

<sup>159</sup>Richard Lattó, *op. cit.* p. 89-91. Lattó writes that we understand that it is impossible for us to recognize the two aspects of ambiguous forms simultaneously, but can only perceive one part at a time, as for example with the reversing staircase or the Rubin vase. Hoffman and Richards suggest that we segment objects into parts by finding contours that are discontinuous and are, usually, areas of concave discontinuity. So far it is only possible to speculate why ambiguities that push the limit of our ability to recognize figures is rewarding. We must, he posits, have evolved a mechanism to encourage this excitement as part of our adaptive capacity.

<sup>160</sup>These kinds of ambiguities play with the brain's stored memory, and because the relationship between objects or situations is different than expected, our awareness of them is heightened. Semir Zeki, *An Exploration of Art and the Brain*, Oxford, Oxford University Press, 1999, p. 45-46.

<sup>161</sup>Harvey Richard Schiffman, *Sensation and Perception; an integrated approach*, New York, 1996, p. 247-287. In chapter 10, on *constancy and illusion*, Schiffman writes that there is no unitary perceptual mechanism or process to explain the cause of major illusions. He refers to Coren and Girgus (1978) who proposed that there are two primary levels at which illusions occur. The optical-retinal, or structural component, and the cognitive component indicate that illusions may be produced by several different sources. Some of these may be due to the structure of the eye or neural interaction within the retina, or higher-level cognitive factors involving judgments and past experiences.

<sup>162</sup>Ministero Per I Beni Culturali E Ambientali, *Pompei 1748-1980*, Naples, I tempi Della Documentazione, Multigrafica Editrice, 1982, p. 30-31. In this catalogue there is an interesting juxtaposition evident between the mosaics found at Pompeii, some of which have patterns that create strong spatial geometric illusions and pictorial ambiguities. A play of illusion is clearly intended in the wall decoration of the Casa Di Fabio Rufo Ambiente with which to delight its audience. It consists of a single wall surface that represents a deep spatial illusion of an approach to a doorway in which a woman is standing just in the process of opening the door inwards. The interior perpendicular walls to this approach are, on the edges of this wall decoration, folded back so that both the right and left receding walls are divergent. As in the case of the *Ixion* Room, I believe the play between convergence and divergence was intentional and was part of the metaphoric apparatus of the third register, but was also important in instigating the visual play that delighted its audience.

<sup>163</sup>Harvey Richard Schiffman, *op. cit.* p. 265. The size and constancy of the framed pedestals creates a distance paradox also known as the *further-larger-nearer* phenomenon (see p. 179). When two different depth cues are adjacent or in near proximity to each other, the reading of the first observed is assumed and persists while the other cue is being perceived. This shift between them is what gives the perception of movement.

<sup>164</sup>V. S. Ramachandran, "To 2-D or not 2-D – that is the question", Richard Gregory and collaborators (eds.), *op. cit.* p. 249-267. Ramachandran writes on the luminance gradient that produces convex or concave perceptual readings, and which works on the basic principle of a graded luminance of light to dark as a background. Aerial perspective also works by having the objects receding into the background progressively in a lighter shade – in this case the bluish haze which is cast over the architectural elements also becomes lighter as they recede further into the background. The presence of the semicircular central *exedra* reinforces the gradient luminance of a concave pictorial space at the centre on the east wall.

<sup>165</sup>Although the term was invented by Leonardo da Vinci, the device was used by Roman painters in Pompeii. The scientific explanation is that it is dust particles in the air that cause the scattering of light, causing the appearance of a bluish veil in the distance. Ian Chilvers, Harold Osborne, Dennis Farr, *The Oxford Dictionary of Art*, Oxford, Oxford University Press, 1994, p. 6.

<sup>166</sup>Sidney J. Blatt and Ethel S. Blatt, *Continuity and Change in Art*, London, Laurence Erlbaum Associates, 1984, p. 238-241. To paraphrase the authors' quotation of Leonardo da Vinci: You know that in an atmosphere of equal density, the remotest objects seen through it, as mountains, in consequence of great quantities of atmosphere between your eye and them, appear blue and almost the same hue as the atmosphere itself when the sun is in the east. Blatt writes that the shift from the topological to projective-spatial conception is consistent with Wölflin (1915) and that the haptic orientation in which objects are concrete, tangible and self-contained is consistent with Riegel's assumption about the haptic (1901-1927). This, in the atmospheric flat painted surface, the lack of the haptic reinforces da Vinci's idea of distance.

<sup>167</sup>Ronald G. Boothe, *op. cit.* p. 291. In the perception of three-dimensional space, how do we use information derived from one or both eyes to perceive the spatial layout of our surroundings? With texture gradients, whether concerning a real space or a representation of pictorial space, the depth cues are similar since we interpret photographs in this way as well. But there is also another aspect to texture gradients, and that is motion parallax and optic flow. Whenever one moves in an environment, the *centre of expansion* in the optic flow gives a basic organization to the environment. In the Ixion Room it is the movement between the floor and the ceiling from eye level. If the floor or ceiling had a particular pattern it would also contribute to a directional sense.

<sup>168</sup>Sheena Rogers, *op. cit.* p. 124.

<sup>169</sup>Stephen M. Kosslyn, *op. cit.* p. 7-8. Mental scanning focused on the fact that depictive representations use functional space to represent actual space, whereas propositional or mentally generated imagery does not.

<sup>170</sup>Jason S. McCarley and Zijiang J. He, *op. cit.*, p. 540-541. [...] Spatial arrangements in which objects are farther from observer and placed higher in the visual field although not universal within the visual environment of humans, are frequent if not predominant. Perhaps more important they are formed by objects that must guide behavior- those objects among and around which an observer must search, navigate, and reach for example [...] A perceptual system adapted through evolution or learning to operate efficiently within the visual environment of humans, however could achieve economy of representation by preferentially encoding the recurrent stimulus structures imposed by the demand for underlying support. Perceptual organization might therefore be expected to favor such a structure [...]

The present experiment both tested and proved this hypothesis. This article speculates on the modification of perceptual response by behavior. I extend this concept of behavior in my thesis to belief structures that, as we will see, take up similar instances and find differently acceptable solutions to the same problems – informed firstly, however, each time by perceptual mechanisms and their capabilities and limitations.

<sup>171</sup>*Ibid.* p. 541. The fact of gravity and of the terrestrial surfaces of support makes it a ready environment characteristic that perception can exploit.

<sup>172</sup>*Ibid.* p. 541.

<sup>173</sup>*Ibid.* p. 540-549.

<sup>174</sup>V. Bozkov, Z. Bohdanecky and T. Radil-Weiss, "The role of Physical and Semantic Components of Form during Eye Scanning", Rudolf Groner, Paul Fraise (eds.), *Cognition and Eye Movements*, Oxford, North-Holland Publishing Company, 1982, p. 24-33. Investigating the physical and semantic role of eye scanning, it was concluded that geometrical elements and features in visual scanning are independent of semantic meaning or higher cognitive processes. The target point selection process is probably a hierarchical one. As the eye scans the figure it takes on meaning, which changes as different information becomes available.

<sup>175</sup>In order to make sense of an image, the image must have correlated features. In a series of light dark discontinuities, one searches for a common edge or common depth, common movement, co-linearity, common colour or lightness. Margaret Livingston and David Hubel, "Through the Eyes of Monkeys and Men", Richard Gregory and collaborators (eds.), *op. cit.*, p. 61.

<sup>176</sup>V. S. Ramachandran, *op. cit.* p. 249-278. Pictures are visual paradoxes, and perhaps it is no surprise when we find out that illusory edges defined by occlusion seem in fact more "real" to the visual system than a 'real' contour defined by luminance. The reason for this, Ramachandran writes, is that luminance edges can arise elsewhere, for example in the borders of shadows or certain elements of texture, and not only at the boundaries of edges. Paradoxically, illusory contours are more reliable indicators of true object boundaries.

<sup>177</sup>It is an unfortunate name for the category and constructs the impression that this system is the only projective one, when in fact all four of Hagen's pictorial systems are projective as she herself mentions.

<sup>178</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 45. A simple compression is parallel projection, and a transformation like hyperbolic rotation is the product of two compressions, or the result of a series of parallel projections.

<sup>179</sup>Pre-Socratic philosophers stressed natural philosophy, and with that also established a connection to cosmology, connecting terrestrial and celestial knowledge. Aristotle saw them as material monists. It must also be remembered that almost all the writing of the pre-Socratic philosophers survives as fragments only and is frequently based on the critique or testimony of later writers. Robert Audi (ed.), *The Cambridge Dictionary of Philosophy*, 2<sup>nd</sup> ed., Cambridge, Cambridge University Press, 1999, p. 733-735.

<sup>180</sup>Richard Tarnas, *The Passion of the Western Mind*, New York, Harmony Books, 1991, p. 471. Tarnas writes that Anaximander proposed that the primary substance, or essential nature – *arche* – of the cosmos, was an infinite and undifferentiated substance he called the *apeiron* (the "boundless"). Within the *apeiron* arose the opposites of hot and cold, whose struggle in turn produced the various phenomena of the world, introducing the notion important to later natural philosophy of going beyond perceptible phenomena (such as water) to a more fundamental non-perceptible substance.

<sup>181</sup>*Ibid.* p. 19.

<sup>182</sup>Aristotle, *op. cit.* p. 698-699. See *Metaphysics*, Book I, Ch. 5, section 986-987 a, b.

<sup>183</sup>*Ibid.* p. 698-700. See *Metaphysics*, Book I, Ch. 5, section 985-7a. The Pythagoreans also thought of the modification of numbers as justice, soul, and reason, and felt that all things were expressible by numbers. They considered that the musical scale could be reduced to numbers, and chose ten to be the perfect number that contained all other numbers. Aristotle, in *Metaphysics* Book I, Ch. 5, 985a, 986a. points out that the system was somewhat contrived in order to conform with the ideology, giving an example that the world has 10 bodies – but really only nine planets, the tenth being the hidden counter earth invented to make up the perfect number 10.

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<sup>184</sup>*Ibid.* p. 48-73. Robert Audi (ed.), *Cambridge Dictionary of Philosophy*, 2<sup>nd</sup> ed., Cambridge, Cambridge University Press, 1999, *p. cit.* p. 376 (Heraclitus), p. 733-735 (Pre-Socratic Philosophers). Aristotle, *op. cit.* p. 698-700. See *Metaphysics*, Book I, Ch. 5, section 985-7a. These texts contributed to an understanding of the origin and elaborations on the concept of transformation.

<sup>185</sup>Robert Audi (ed.), *op. cit.* p. 712.

<sup>186</sup>*Ibid.* p. 518. Logos, for Heraclitus, teaches that all things are one, whereas later in Stoicism this was considered the divine order.

<sup>187</sup>Aristotle, *op. cit.* p. 698-700. See *Metaphysics*, Book I, Ch. 5, section 985-7a, b. Robert Audi (ed.), *op. cit.* p. 44-53.

<sup>188</sup>*Early Greek Philosophy*, Jonathan Barnes (ed. & trans.), London, Penguin Classics, 1987, p. 206. It was believed that atoms move in empty space because of dissimilarities and various other differences. Because of their different shapes, they interlocked and intertwine but never really become one, and are separated due to some other more dramatic action when some stronger necessity reaches for them.

<sup>189</sup>*Early Greek Philosophy*, *op. cit.* p. xix.

<sup>190</sup>*Ibid.* p.105-109.

<sup>191</sup>*Early Greek Philosophy*, *op. cit.* p.107.

<sup>192</sup>Not to be confused with Zeno of Elea, whose four paradoxes concerning space and motion are well known.

<sup>193</sup>Epictetus, *Enchiridion*, George Long (trans.), New York, Prometheus Books, 1991, p. 6.

<sup>194</sup>*Ibid.* p. 6.

<sup>195</sup>Seneca, *Letters from a Stoic: Epistulae Morales ad Lucilium*, Robin Campbell (ed. & trans.), London, Penguin Classics, 1969, p. 21. Campbell introduces the question, also raised by others, of whether these letters were indeed written as letters to Lucilius, or are disguised meditations circulated in the form of letters.

<sup>196</sup>*Ibid.* p. 98.

<sup>197</sup>*Early Greek Philosophy*, *op. cit.* p. 253.

<sup>198</sup>*Ibid.* p. 253.

<sup>199</sup>*Ibid.* p. 253.

<sup>200</sup>*Ibid.* p. 226.

<sup>201</sup>*Ibid.* p. 227. Having no certainty in knowledge became too "unlivable" a reality for many, and Democritus was therefore accused of being an extreme Skeptic by the Epicurean Colotes.

<sup>202</sup>*Ibid.* p. 18, note 81.

<sup>203</sup>*Ibid.* p. 20, Text 3, note 88.

<sup>204</sup>*Ibid.* p. 3-4. Epicurus was materially reserved to the point that he lived on bread and water with the occasional piece of cheese. He believed that it was important to divest oneself of everything unnecessary for survival, and that this would result in true happiness because the only responsibility was to make sure that the body had what it needed. It also gave time to spend being conscious and perceptually aware of being in the world, which would calm the soul.

<sup>205</sup>Robert Audi (ed.), *op. cit.* p. 846-852.

<sup>206</sup>Richard Tarnas, *op. cit.* p. 75-79, 77.

<sup>207</sup>Robert Audi (ed.), *op. cit.* p. 846-847.

<sup>208</sup>Epictetus, *op. cit.* p.11.

<sup>209</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 186. In the theatre of Marcellus dedicated between 13 and 11 B.C.E. in memory of Augustus, the stage is constructed out of a two storey *scaenae* front, while a later model of the Roman theatre at Sabratha in modern Libya has three stories.

<sup>210</sup>Carlo L. Ragghianti. *Pittori di Pompei*. Milan, Edizione del Milione, 1963, p. 38. The actors' gaze would be interpreted as a morphological coincidence in that the sight lines intentionally define a line of sight that corresponds to perspectival convergence of architectural constructions. See J. Michael Walton, *op. cit.* p. 32. Characters in a Greek play are not only defined by stage accessories and costumes, but also by their physical attitude; for example: arrogance – hand on hip, etc. One could say that pictorial space to some extent is defined here by both the actors' posture and the direction of their gaze.

<sup>211</sup>Epicurus, *op. cit.* p. 6, 13

<sup>212</sup>Lucretius. *On the Nature of the Universe*, R.E. Latham (trans.), London, Penguin, 1994, p. xiii, 35, 106-107.

<sup>213</sup>G.E.R. Lloyd, *Greek Science after Aristotle*, London, Norton, 1973, p. 27.

<sup>214</sup>The many incarnations of a deity: Fortuna, the Roman fertility goddess; Fortuna Augusta, referring to the Emperor; Fortuna Balnearis, goddess of health and well being; Fortuna Conservatrix, the preserver, the protectress; Fortuna Equestris, for the Equestrian class; Fortuna Huiusce Diei, good fortune of the day; Fortuna Muliebris, good fortune of women; Fortuna Primigenia, sanctuary; Fortuna Privata, for the private individual; Fortuna Publica, good fortune or luck of the People; Fortuna Redux, Fortune, the home bringer. Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, 1996, p. 85.

<sup>215</sup>Vitruvius, *op. cit.* p. 31. Minerva was part of the principle Roman trinity of Jupiter-Zeus, Juno and Minerva which, it was believed, protected the state of Rome.

<sup>216</sup>Pierre Grimal, *op. cit.* p. 241. The doors of the temple should always be left open as long as Rome was at war so that the god Janus could any time come to the aid of the Rome

<sup>217</sup>Ethical propositions are based on judgments. Twelve figures in the upper register sit in Judgment, giving the possible reading as that of a court. Presiding as the thirteenth presence is Augusta-Fortuna at the centre of the upper register casting the deciding vote, representing both fate and the state. And on the lower edge of the upper register, the wide gilded pedestal-like bases of the temple-pavilion or *aedicula* that support the gods of this upper register emanate light, the ascending light of Plato's cave. See Cicero, *On the Good Life*, Michael Grant (trans.), London, Penguin, 1971, p. 91: [...] But what inconsistency his [Epicurus'] works reveal. For here is a man who actually identifies evil with pain and good with pleasure, thus making a mockery of all our attempts to establish moral standards, a man who declares we are just wasting our time and uttering mere meaningless sounds, since nothing is really of the slightest significance except pleasant or unpleasant physical sensations.

<sup>218</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 186-188. In the theatre of Marcellus dedicated between 13 and 11 B.C.E. in memory of Augustus, has two storey *scaenae* fronts. A later model, the Roman theatre at Sabratha in modern Libya, has projecting structure or *aediculea* in front of the rear wall surface supported from beneath on columns. In the Ixion Room, the *aediculae* stand on projected pedestals but have no columns supporting them from underneath.

<sup>219</sup>“The Real is one of the three cognitive dimensions or ‘orders’ (the other two being the Imaginary and the Symbolic) in the psychoanalytic theory of Jacques Lacan, *Ecrits*, 1977. Of the three, the Real is the most elusive, and it possesses a philosophical sophistication that sets it apart from older psychoanalytic concepts that depend on transparent ideas of reality, such as Freud's Reality principle. For Lacan, objective perception or description is impossible, since our access to the external world is always mediated by Imaginary investments and the symbol systems through which it is apprehended. The Real is thus a kind of residue, which must remain outside of speech and language. Yet the Real is also present in the unconscious and is felt in dreams, symptoms, and the hallucinations of psychotics [...] In Lacan's usage, the Real is quite a different thing from ‘reality’, which refers simply to subjective reality. At the same time, it is ultimately inseparable from the other two orders, forming the hidden underside of Imaginary and Symbolic formations.” Joseph Childers and Gary Hentzi (eds.), *The Columbia Dictionary of Modern Literary and Cultural Criticism*, New York, Columbia University Press, 1995, p. 254 -255.

<sup>220</sup>Vitruvius, *op. cit.* p. 198.

<sup>221</sup>Aristotle, *op. cit.* p. 259 (*Physics*, Book III, Ch. 4, section 203 b). Aristotle on the question of the Infinite.

<sup>222</sup>Vitruvius, *op. cit.* p. 213.

<sup>223</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 186.

<sup>224</sup>John R. Clarke, *op. cit.*, p. 31, quoting August Mau, *op. cit.*,

<sup>225</sup>There are the remains of a fourth panel on the south wall obliterated by the insertion of a door at some point in the history of the room. The remnant of the panel appears to include the figure of a hermaphrodite, and this is interesting for the fact that in the myth, Hermaphroditus was raised by Nymphs in the forest; and secondly, that he was generally represented as a follower of Dionysus, who is pictured above on the same wall. Certainly, he represents another instance of that transitional and ambiguous identity that is so evident in the pictorial space of the decorations. For the myth, see Pierre Grimal, *op. cit.* p. 209.

<sup>226</sup>*Ibid.* p. 165. (Feronia)

<sup>227</sup>Virgil, *The Aeneid*, John Jackson (trans.), Hertfordshire, Wordsworth Edition, 1995, p. 147-163, (Erylus p. 149, 153)



<sup>228</sup>Karl Schefold, *op. cit.* p. 145-146. In the index of iconographic descriptions of the Ixion Room, the author identifies the two figures as a Satyr, with the wood spirit representing in each panel the three different seasons: Spring, Summer and Fall. The identification with Feronia seems logical given the history of the Vettii, but in either case the essential reference is to transformation and change.

<sup>229</sup>William C. Archer, "The Maturing of the Fourth Style: the Casa della Nozze d'Argento at Pompeii", *The Journal of Roman Archaeology*, vol. 9, 1996, p. 148. Archer concludes by identifying the Fourth Style as *multiplanar or spatially ambiguous schemes*.

<sup>230</sup>The Sceptics have not been discussed because their program had the character of a critique rather than an agenda. To this extent, the Sceptic was limited to simply accepting or denying any proposition. One might say that for a Sceptic, all representations would be merely interesting.

<sup>231</sup>Lesley Adkins and Roy A. Adkins, *Life in Ancient Rome*, 1994, p. 355.

<sup>232</sup>Pliny the Elder, *Natural History; a selection*, John F. Healy (trans.), London, Penguin, 1991, p. 324-341. (Book XXXV: Painting, Sculpture, Architecture)

<sup>233</sup>Virgil, *The Aeneid*, John Jackson (trans.), p. 103.

<sup>234</sup>Christian mythic belief would state that Jesus died on the cross on the heights of Golgotha. Christian *religious* belief is that Jesus died to absolve the sins of mankind.

<sup>235</sup>St. Augustine, *Concerning the City of God; against the pagans*, Henry Bettenson (trans.), London, Penguin, 1984, p. 144.

<sup>236</sup>Pliny the Elder, *op. cit.* p. 12.

<sup>237</sup>Frederik Poulsen, *Etruscan Tomb Paintings; their subjects and significance*, Ingeborg Anderson (trans.), Oxford, Clarendon Press, 1922, p. 35, 48. The Emperor Claudius was versed in Etruscan, and he delivered an address to the Senate pleading to preserve Etruscan ritual. The Roman emperors as a rule employed Etruscan soothsayers who read the sacred text, though in the Latin translation. The art of divination was, however, reserved for nobleman and their wives only. The Romans, despite conquering Etruria, continued to confine the art of divination to the nobility. Cicero also remarks in his book, *The Ideal State*, that omens and presages should only be left to Hauspices and the nobles, and that they should be the only ones to transmit this knowledge.

<sup>238</sup>Geoffrey Parrinder (ed.), *World Religion from Ancient History to the Present*, New York, Hamlyn, 1983, p. 164.

<sup>239</sup>*Ibid.* p. 164-165.

<sup>240</sup>Leslie Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 111.

<sup>241</sup>*Ibid.* p. 111, 141. The authors mention forty-one incarnations of the God Mars – there is for example an Iberian incarnation, but the majority are Celtic or Germanic.

<sup>242</sup>*Ibid.* p. 120-126. Jupiter also had 37 incarnations: Roman, Celtic, Austrian, and Iberian among others – each a different aspect of his identity: weather, rain, stones. The sky god Jupiter Milichius, or Zeus Milichius as he was known by the Greeks in Sicily, was a deity associated with agriculture and abundance.

<sup>243</sup>Geoffrey Parrinder (ed.), *op. cit.* p. 168-169.

<sup>244</sup>*Ibid.* p. 165-166. Pax-decorum was connected to a sacrifice or ritual that secured co-operation of the god being solicited. It was the *pontifices* who with four high priests carried out the official sacrifice. Their position in the Roman hierarchy of power was great because Augustus also elevated himself to the status of *pontifex maximus*. The more personal offerings or votive offerings were a form of sacrifice fulfilling a vow. See also L. Adkins and R. Adkins, *Dictionary of Roman Religion*, p. 243.

<sup>245</sup>Joyce E. Salisbury, *Perpetua's Passion*, New York, Routledge, 1997, p. 9.

<sup>246</sup>Celsus, *Celsus on the True Doctrine*, R.J. Hoffman (trans.), Oxford, Oxford University Press, 1987, p. 87.

<sup>247</sup>St. Augustine, *Concerning the City of God: against the pagans*, p. 144-145. (Book IV, Ch. 9).

<sup>248</sup>John R. Clarke, *op. cit.* p. 7. Clarke writes that the basis of reading omens was central to both Etruscan and Roman religion. Etruscan deities were located in relationship to cardinal points on the axis, and each zone of the circle was divided into posterior and inferior regions – in front and behind. The *haruspex* or priest positioned himself in the space of this circle to read portents such as the flight of birds or the direction or character of lightning.

<sup>249</sup>St. Augustine, *Concerning the City of God: against the pagans*, p. 146. (Book IV, Ch. 9) St. Augustine develops an interesting material theory of how the gods became responsible for different parts of the universe. Jupiter and Juno are ether and air, Neptune is water, and Pluto the earth.

<sup>250</sup>*interpretatio romano* was the name given to the assimilation and interpretation of foreign gods into the Roman pantheon. They paid tribute to the local gods by associating them with the idea of genius, and they converted local deities that inhabited regions they conquered by associating them with Roman gods. For example, the Celtic mother goddess became associated with the Fates. And the Eastern cult of Mithras became Jupiter of Dolche. This assimilation process went both ways in that the conquered local people had rituals in order to assimilate Roman gods into their pantheon. Geoffrey Parrinder (ed.), *op. cit.* p. 168.

<sup>251</sup>Robert Etienne, *Pompeii: the day a city died*, New York, Abrams, Discoveries Collection, 1992, p. 117.

<sup>252</sup>Antonio Tripolitis, *Religion of the Hellenistic Roman Age*, Grand Rapids, Michigan, William B. Eerdmans, 2002, p. 5-17. Roman religion was suffused with a multitude of different cults that increased with the ever-expanding empire. Purification rites associated with redemption and inner illumination were achieved through cult rituals like the cult of Demeter associated with the Eulustian mysteries, or the cult of Dionysus and Isis, important to citizens of Pompeii. Astronomy of the fourth century B.C.E. influenced the urgency for purification rituals in that they constructed a very specific cosmic spatial ordering that divided the universe into the realm of trans-lunar and sub-lunar regions. Below the sub-lunar existed the terrestrial or material world. This world was a place of fate, corruption, mutability and death. The world of the spirits, or trans-lunar world, was that of transcendence, and it was the act of purification through which the soul could be redeemed that made the higher order accessible. The doctrine of rewards and punishment is stressed in Plato's *Phaedrus* and *Phaedo*. These beliefs in turn initiated the mystery cults (*mysteria* is the Greek term for initiation) in which initiation ceremonies enabled individuals to be an initiate into the fellowship of the divine.

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<sup>253</sup>Robert Etienne, *op. cit.* p. 186.

<sup>254</sup>Vitruvius, *op. cit.* p. 122. The pedimented roof was reserved for temple architecture, and as such signaled this context in fresco painting or in a theatre *skenal* or set.

<sup>255</sup>John R. Clarke, *op. cit.* p. 208.

<sup>256</sup>Barbara G. Walker, *op. cit.* p. 1018. According to Walker, the Capitoline Triad includes Juventas the Virgin, Juno the Mother (see p. 484), Juno Fortuna, goddess of Fate and Minerva the Wise Crone (see p. 658). Minerva's totem, an owl, was the same as Athena's. An owl was known as the bird of wisdom. Minerva was part of the original Roman Capitoline Crone Triad. Under the empire, Junonetas was ousted to make room for the masculine member of the trinity, Jupiter (see p. 303). Fortuna was another trinity; the Greeks called her Tyche, Dike and Nemesis, the Babylonian Mother of Destiny. She is seen as both a trinity or a monad (see p.). Athene was the Libyan Triple goddess, and was united with the phallic Pallas, whose palladium was a lingum, later Rome's greatest fetish. On this, see Pierre Grimal, *op. cit.* p. 66. Athena was identified in Rome with Minerva (see p. 238). Isis originated from the Egyptian pantheon and was fully integrated into the religious syncretism of Rome in the second century B.C.E. She ruled the sea, fruits of the earth and the dead. As goddess of magic, Isis also controlled the transformation of things and beings and the elements. Her cult was also worshiped in Pompeii.

<sup>257</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 87.

<sup>258</sup>In Pompeii's forum stands also the temple of Fortuna-Augusta, the personalized Fortuna of the Emperor Augustus.

<sup>259</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 82-88.

<sup>260</sup>John R. Clarke, *op. cit.* p. 208.

<sup>261</sup>The temple of Apollo was also located in the Forum. Apollo is identified with Delphi and the Oracle, and he was associated with beauty and love – that is, platonic love. He also absolved Orestes from the crime of killing his mother. Augustus claimed him as his true father and guardian: Augustus' mother is said to have fallen asleep in the Temple of Apollo, where she conceived Augustus through the instrument of the god. Augustus built a temple of Apollo next to his home, and established a private cult of Apollo in his honor. Apollo was also taken by Augustus as his personal guardian, and ascribed to him the naval-victory which he had won over Anthony and Cleopatra. Pierre Grimal, *op. cit.* p. 47-50.

<sup>262</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 62.

<sup>263</sup>Robert Etienne, *op. cit.* p. 190-191.

<sup>264</sup>Virgil, *The Aeneid*, Robert Fitzgerald (trans.), New York, Random House, 1990, p. 30. (Book I, lines 995-1010).

<sup>265</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 129, 177.

<sup>266</sup>The *lares familiaris* is similar to a deity from other parts of the world in which the ancestral spirits presided over fertility of the land; it is thought to have been introduced by farm workers. Geoffrey Parrinder (ed.), *op. cit.* p. 164.

<sup>267</sup>Stephano De Caro (ed.), *The Secret Cabinet in The National Archaeological Museum of Naples*, Naples, Electa, 2000, p. 16.

<sup>268</sup>Stephano De Caro (ed.), *Still Lifes from Pompeii*, Naples, Soprintendenza Archeologica, 1999, p. 14.

<sup>269</sup>Virgil, *The Aeneid*, Robert Fitzgerald (trans.), p. 30. (Book I, lines 1005-1010). "Now be with us Bacchus, give of Happiness and kindly Juno, And all you Trians attend In friendliness this meeting that unites us...At this she tilted a libation out and put the vessel to her lips..."

<sup>270</sup>Stephano De Caro (ed.), *Still Lifes from Pompeii*, p. 28.

<sup>271</sup>*Ibid.* p. 11-12. A *Xenia* is regarded as an independent or separate painting representing a food that is an offering. For such an act there is an urgency to present a level of pictorial reality. They were frequently painted with elaborate frames, imitating as closely as possible the shrine's wooden structure, and later these became frames in paintings that show the greatest attention to detail, even reproducing the nails in the frames and frequently as well shutters to protect the offering or painting. These still-life scenes or offerings, complete with shutters, can be seen on the walls of the Casa del Criptoportico, Diaeta, on the south wall, reproduced in H.G. Beyen, *Die Pompejanische Wanddekoration vom Zweiten bis Vierten Stil*, Den Haag, Martinus Nijhoff, 1960, plate 32 and 33. See also Stephano De Caro, *The Secret Cabinet in The National Archaeological Museum of Naples*, p.17. These objects were also sold at shops near the temples. Terracotta objects, which included body parts like sexual organs – phallus, uterus or breasts – were offered concerning desires and appeals linked to reproduction.

<sup>272</sup>Martial, *Epigrams*, D.R. Shackleton Bailey (trans.), Cambridge Mass., Harvard University Press, 1993, Volume III, p. 173–224. (Book XIII)

<sup>273</sup>*Ibid.* p. 189.

<sup>274</sup>A *xenium(-a)* was a gift of fine food offered to a guest upon arrival; a painting representing the food. John R. Clarke, *op. cit.* p. 378.

<sup>275</sup>L.R. Lind (ed., trans.), *Latin Poetry in Verse*, Oxford, Oxford University Press, 1967, p. 265. Martial again plays with this question of representation and reality. "In pictures Form my Publius has portrayed, where so lifelike Issa might perceive, That not herself a better likeness made, Issa together with her portrait lay, Both real or both depicted you would say". For another translation see: Martial, *Epigrams*, D.R. Shackleton Bailey (trans.), p. 125, Book I: In the poem, Issa, is Publius' beloved lap dog "That her last day may not snatch all of her away, Publius is painting her picture. There you will see an Issa so like herself is not so like her. In fine, compare Issa with the picture: either you will take both for real or both for painted."

<sup>277</sup>Pierre Grimal, *op. cit.* p. 50.

<sup>278</sup>Geoffrey Parrinder (ed.), *op. cit.* p. 170.

<sup>279</sup>The Sibylline Books, however, were not for public consumptions, as the Roman priest insisted on maintaining a particular Roman ideology or way of life. Private copies of the oracles in the Sibylline Books were not available to the public and copies of Oracles were not approved. Max Cary, *A History of Rome Down to the Reign of Constantine*, Rev. by H.H. Scullard. London, Palgrave, 1988, p. 109.

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<sup>280</sup>Pliny the Elder, *op. cit.* p. 13.

<sup>281</sup>Barbara G. Walker, *op. cit.* p. 1017. In the West, the trident passed to the gods of the abyssal, or underground, of Hades, the realm of Pluto, Neptune and Poseidon – eventually the domain of the Christian devil.

<sup>282</sup>Athena was in charge of building the ship *Argo*, up to that time the biggest ship ever built. Pierre Grimal, *op. cit.* p. 67.

<sup>283</sup>Janus, the god of Beginnings, and also of gates and doorways, looked in opposite directions, just as the door itself has two faces. The small shrine to him in Rome had two doors on the east and west passage that were closed at both ends only in time of peace. Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 262.

<sup>284</sup>Poseidon fought with Athena for the rule of Attica. Poseidon made water gush out from acropolis with the force of his trident, while Athena made an olive tree grow. The 12 judges voted in favor of Athena. Pierre Grimal, *op. cit.* p. 387.

<sup>285</sup>The double-faced Janus was one of the oldest Roman gods, the first to be addressed in any prayer and the first to receive a portion of a sacrifice. January, the first month of the year, was named after him as he was identified with the god of beginnings and of gates and doorways. Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 111.

<sup>286</sup>Denis Feeney, *Literature and Roman Religion at Rome: cultures, contexts and beliefs*, Cambridge, Cambridge University Press, 1998, p. 27.

<sup>287</sup>*Ibid.* p. 13.

<sup>288</sup>Neptune was among the only three gods to which a Bull might be sacrificed. Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 165, 211, 287.

<sup>289</sup>Virgil, *The Aeneid*, Robert Fitzgerald (trans.), p. 186. (Book VI, lines 1016-1020)

<sup>290</sup>*Ibid.* p. 30. (Book I, lines 995-1010). Daedalus flees the realm of King Minos to the great north, portrayed on the north wall in the *Ixion* Room, and Ariadne, daughter of King Minos, being admired by Dionysus, is located on the south wall.

<sup>291</sup>*Ibid.* p. 160. (Book VI, lines 35-45).

<sup>292</sup>*Ibid.* p. 317 -318. (Book X, lines 35-45, 884-885, 895).

<sup>293</sup>David C. Lindberg, *Theories of Vision from Al-Kindi to Kepler*, Chicago, University of Chicago Press, 1976, p. 12.

<sup>294</sup>Irene Iacopi, *Domus Aurea*, Rome, Electa, 1999, p. 25, illus., p. 131 (125. stanza n. 85, Quadretto di paesaggio lacustre animato da figure appena abozzate).

<sup>295</sup>G.J. Kern, "Glyptothek und die Skenographie bei Vitruv", Rome, *Jahrbuch des Deutschen Archeologischen Instituts*, no. 53, 1938, p. 246-263. Kern suggests that it might also be possible that the circle is in reference to the cone of vision, especially as the god of the sun – fire is standing at its centre. Because each wall in the Ixion Room has its own integral pictorial organization and its symmetry, I decided to work with each wall as though looking into each one separately. However, because the east wall attempts to give the appearance that the north wall and south wall are extending into the window-alcoves of the east wall, I felt that Kern's approach might be extended into looking not only at the room from above, but from the point of entry, as Clarke suggests.

<sup>296</sup>Vitruvius, *op. cit.* p. 72-73. (Ch. 1, *On Symmetry*) "For if man was placed flat on his back, with his hands and feet extended, and a pair of compass centred at his naval, the fingers and toes of his two hands and feet will touch the circumference of a circular outline described therefrom."

<sup>297</sup>John R. Clarke, *op. cit.* p. 33-35.

<sup>298</sup>The first style can be said to be the period between 100–50 B.C.E.

<sup>299</sup>Lucretius, *op. cit.* p. 106. (Book IV, line 426). Euclid, *L'Optique et la Catoptrique*, Paul Ver Eecke (trans.), Paris, Albert Blanchard, 1959, p. 9. Lucretius' observation has echoes in Euclid's 12<sup>th</sup> theorem here: "les rayons celles qui sont à droit semblent passer à gauche, et celles qui sont à gauche passer à droite."

<sup>300</sup>Andreas Linfert, *Roemische Wandmalerei der Nordwestlichen Provinzen*, Cologne, Römisches-germanisches Museum der Stadt Köln, 1975, plate 3, p.11. In The Casa Grifi, Rome, The Palatine, the walls are decorated with pillars, each resting on a large vertical base and represented in diverging perspectival lines as though rays from the eyes of the viewer at the point of entrance make up their configuration. Linfert, however, interprets these pictorial representations as though part of traditional linear perspective, comparing it to a view through an open window. Linfert fails to notice the distortions that would occur once entering the room.

<sup>301</sup>The point of convergence that we speak of as a vanishing point was only named as recently as 1790-1800. *Webster's Unabridged Dictionary*, 2<sup>nd</sup> Ed., New York, Random House, 1997, p. 2104.

<sup>302</sup>It needs to be noted here that Lucretius had a somewhat different theory of vision, based on atomic theory as previously described, involving the emanation in all directions of fine 'films' from objects which then intersect with the eye: "since we see only with our eyes, it is only when we direct our vision towards any particular quarter that all the objects there strike it with their shapes and colours." But there would here as well be no sense of convergence, since what is being perceived amounts to the reception at an atomic level of the object as a whole, a kind of ghost sensation. Lucretius, *op. cit.* p. 101.

<sup>303</sup>Patrick Maynard, "Perspective's Places", *The Journal of Aesthetics and Art Criticism*, 54, Winter 1996, p. 21-40. Maynard writes that window-measurement, relative foreshortened proportions and position of the viewer shifts even in the way we approach a two dimensional image, seeing it from the side or from the front.

<sup>304</sup>Vitruvius, *op. cit.* p. 198.

<sup>305</sup>John White, *The Birth and Rebirth of Pictorial Space*, New York, Harper and Row, 1972, p. 251. White challenges the legitimacy of the Vitruvius translation, especially the idea of centre as opposed to centre of a circle.

<sup>306</sup>Vitruvius, *op. cit.* p. 14.

<sup>307</sup>*Ibid.* p. 147.

<sup>308</sup>Joanne Berry (ed.), *Unpeeling Pompeii*, Milan, Soprintendenza Archeologica dei Pompei, Electa, 1998, p. 62. In Region I, insula 9, House no. 9, there was a painter's workshop judging from the many finely ground pots of pigment. Several grinding stones and a pestle were found, as well as a collection of different tools including compasses, a plumb-bob which would have been used to design and execute wall decorations, and spoons and spatulas used to mix pigments.

<sup>309</sup>Vitruvius, *op. cit.* p. 14.

<sup>310</sup>Euclid, *L'Optique et la Catoptrique*, Paul Ver Eecke (trans.), Paris, Albert Blanchard, 1959, p. 9. *Proposition XII "Parmi les grandeurs ayant leur longueur à l'avant, celles qui sont à droite semblent passer à gauche, et celles qui sont à gauche passer à droite"*. See also Elaheh Kheirandish, *The Arabic Version of Euclid's Optics*, Volume I, Cambridge, Mass., Harvard University Press, 1998, p. 40. I would restate this passage as follows: Given two parallel magnitudes and the position of the eye at centre drawing three equidistant rays from the eye to intersect with the left magnitude and three equidistant to intersect with the right magnitude those to the right will appear to pass progressively to the left and those rays to the left will progressively appear to pass to the right. This means to me that although Euclid is making a logical proposition and simply describes his diagram nevertheless he is implying the same observation as Lucretius makes with respect to the colonnade.

<sup>311</sup>Vitruvius, *op. cit.* p. 175. However, Vitruvius is not beyond recognizing the occurrence of perceptual distortion that he suggests could be corrected in this way: "[...] Since, therefore, the reality may have a false appearance, and since things are sometimes represented by the eyes as other than they are, I think it certain that diminutions or additions should be made to suit the nature or needs of the site, but in such fashion that the buildings lose nothing thereby [...]" (Book 6, Ch. 2, section 4)

<sup>312</sup>*Ibid.* p. 198.

<sup>313</sup>Renate Thomas, *op. cit.* p. 115-117. The architectural views through the "windows" are constructed with a central perspective that is hidden by the central mythological panel, but also appear to continue through to the other walls, again hidden by the tapestry that is situated to its side and therefore hiding its possible connection to the architectural construction on the adjoining wall.

<sup>314</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 264. Hagen speaks of the Roman mural as *implied* projective constructions:

[...] Many, many pictures show only one pair of a set of parallel edges and hide the corresponding set by the framing of the segment or by another architectural unit. It is rather as if these multiple station point constructions were created with a conscious awareness of the problems implicit in combining projective perspective from several viewpoints into one picture. This is a strongly three-dimensional style, frequently theatrical in the settings and framings of the central images. Depicted objects are not stratified, nor are they shown in uniform orientation to the picture plane.

<sup>315</sup>Edwin Panofsky, *Perspective as Symbolic Form*, New York, Zone Books, 1991, p. 102. Panofsky makes reference to Frank Pfuhll, *Malerei und Zeichnung der Griechen*, Strassburg, Trubner, 1917, p. 76. This concerns the perspectival doctrines of Democritus and Anaxagoras that is only known through the existence of the title of *Atkinografie* (The Drawing of Rays). Panofsky argues that this cannot be thought of as an instruction manual for painters, but rather a treatise on Optics. But if the painters are familiar with geometry, and Euclid spoke both of the three dimensional and the diagram, I see no problem about the concept of drawing of rays as a tool also for pictorial representation. See also Jacob Isager, *Pliny on Art and Society; The Elder Pliny's Chapters on the History of Art*, New York, Routledge, 1991, p. 128-129. See Pliny the Elder, *op. cit.* Book 34, in the section "Early Roman Painting – Eminent Artists" p. 325-336, Pliny outlines the technical evaluation of the painter as a professional, identifying his source as Antigonos and Xenocratis (now more attributed to Xenocratis). Eupompus was the first painter who accordingly was educated in all the current disciplines, [...] especially arithmetic and geometry. He did not believe that perfect art could be created without such a knowledge [...] this is an important reference because – as Pliny mentions in his remarks on painting and sculpture and architecture, Book 35, note 80 – in the 112 Olympics Asclepiodorus won the first place in perspective...*that is the art of determining the distance between objects.*

<sup>316</sup>H.G. Beyen, *op. cit.* Zweiter Band, Erster Teil p. 49-56, Tafel 3. In the Casa delle Nozze d'Argento's oecus, four real pillars supporting a plinth (an open porticus) are arranged at each corner of the oecus. This is understood to be from the beginning of the second style: see Andreas Linfert, *op. cit.* p. 11-15. Note here Gliederungssysteme (pictorial systems). A slightly later version is in the Casa dei Grifi in Rome, on The Palantine, in which the columns are now painted and their perspective functions well from the entrance.

<sup>317</sup>Theodor Kraus and Leonard Von Matt, *Pompeji und Herculaneum: Anlitz und Schicksal Anticker Stadte*, Vol. 2, Cologne, Du Mont Schauberg Verlag, 1973, p. 294. The Villa dei Misteri. While the architectural impulse dominated the decorations of the villa, it is the figures that dominate the decorations of the Dionysian Mysteri in this villa. Kraus and Matt do not, however, articulate the particular characteristics or problems of the architectural illusions that were being constructed.

<sup>318</sup>Naphtali Lewis, Meyer Reinhold (eds.), *op. cit.* Vol. II, p. 219-223 p 221. Strabo and Ptolemy (Geography) comments on the deductive reasoning of Eratosthenes, the Hellenistic founder of rationalized principles of geography, who states "that if the earth is spheroidal, just as the universe is, it is inhabited all the way around" Strabo's *Geography* consists of 17 books which were devoted to Greece, Gaul, Spain, Italy, north and south Europe, Asia, Asia Minor, India, Assyria, Babylonia, Syria Arabia, Egypt and Africa. Strabo chiefly employed Greek authorities, probably amassing the material in Alexandria and returning with his collection to Rome, where he compiled his 17 books. Strabo wrote[...] I must in this treatise take for granted and accept the propositions proved there. So I must take for granted that the universe is spheroidal, and also that the earth's surface is spheroidal [...] and I need only indicate, in a brief and summary way, whether a proposition comes- if it really does- within the range of sense perception or of intuitive knowledge. Take, for example, the proposition that the earth is spheroidal. Whereas the suggestion of this proposition comes to us immediately from the law that bodies tend toward the centre and that each body inclines towards its own centre of gravity, the suggestion comes immediately from the phenomena observed at sea and in the heavens; for our sense perception and also our intuition can bear testimony in the latter case. For instance, it is obviously the curvature of the sea that prevents sailors from seeing distant lights that are placed on level with their eyes. At any rate, if the lights are elevated above the level of the eyes they become visible, even though they be at a greater distance from the eyes; and similarly if the eyes themselves are elevated, they see what was before visible [...] So also, when the sailors are approaching land, the different parts of the shore become revealed progressively, more and more, and what at first appeared to be low-lying land gradually grows higher and higher. ).



<sup>319</sup>Aristotle, *op. cit.* Ch. 2, *Memory and Reminiscence* p. 615. This works well with Euclid's proposition 5 of equal magnitudes unequally distant[from the eye] are seen as unequal and that the one closer to the eye is seen as the greater. This proposition is also identical in Kheirandishe p 14 and Eecke's p 4-5 version.

<sup>320</sup>Peter Connolly and Hazel Dodge, *op. cit.* p. 139.

<sup>321</sup>Ian Chilvers, Harold Osborne, Dennis Farr (eds.), *The Oxford Dictionary of Art*, Oxford, Oxford University Press, 1994, p. 186.

<sup>322</sup>Joanne Berry, *op. cit.* p. 34. See also Hernandez Ramirez, *La Pintura Romana Antigua*, Merida, Museo Nacional de Arte Romano, 1996, p. 40: a drawing of the different phases of fresco painting using a scaffolding.

<sup>323</sup>The attribution of mythological pictures for the *Ixion* Room is given to the fourth style 'Iphigenia painter'. For a decoration project like that of the *Ixion* Room, a number of workshops probably participated in the painting simultaneously. The heavy detail of the fourth style upper zone also meant that there were two different groups of artists working side by side, those that concentrated on the architectural detail and those that worked primarily on the figures. L. Richardson, jr., *A Catalog of Identifiable Figure Painters of Ancient Pompeii, Herculaneum and Stabiae*, Baltimore, John Hopkins University Press, 2000, p. 7, 129-140.

<sup>324</sup>Vitruvius, *op. cit.* p. 74-75. According to Vitruvius, a man's ideal height is six feet, and since a Roman foot is 296 mm, that makes six feet equal 177cm. This measure was conceived to coincide with a man circumscribed by a circle, his naval being at its centre. However, architectural measurements were idealized, and if we look at the commensurability of the *Ixion* Room, they were so applied. An important reference is Lesley Adkins and Roy A. Adkins, *Handbook to Life in Ancient Rome*, p. 313. In the section on weights and measure, one Roman foot equals 296 mm or 11.65 inches.

<sup>325</sup>For example, the foot was between 11.65 contemporary inches and was originally divided into 16 fingers that later became 12 Roman inches. Larger distances were measured by human paces, five thousand of which became a mile. Lesley Adkins and Roy A. Adkins, *Handbook to Life in Ancient Rome*, p. 313.

<sup>326</sup>Tom Flynn, *The Body in Three Dimensions*, New York, Abrams Perspectives, 1998, p. 36. The Roman physician Galen is quoted as saying that image makers in general observe the rules of proportions as laid out by the "Canon" of Polykleitos, which achieved its recognition as a result of having a precise commensurability (*symmetria*) of all the (body) parts to one another. See also Giafilippo Caretoni, *La Decarazione Pittorica della Casa Di Augusto sul Palatino*, Rome, Mitteilung Deutsches Archeologisches Institut, Römische Abteilung, 1983, p. 373-419. Caretoni confirms the concept of commensurability between the architecture and the division and elements of the wall decorations. For details see p. 374.

<sup>327</sup>First Quebec Biennale – *Problems of Knowing*, Quebec City, 2000.

<sup>328</sup>G.E.R. Lloyd, *op. cit.* p. 91. Heron reports that artists as well as other tradesmen had to have theoretical knowledge of geometry, arithmetic, astronomy and physics, and the manual activity associated with them. [...] One who has been brought up in those branches of knowledge from childhood and has acquired skill in those arts and who has a versatile nature will, they say, be the best... craftsman[...] (architecton)

<sup>329</sup>Euclide, *L'Optique et la Catoptrique*, p. xi. Euclid's *Optics* and *Dioptrix* are for the first time attributed by Proclus of the 5<sup>th</sup> century School of Philosophy.

<sup>330</sup>This elevator effect could be equated to the *deus ex machina*, the crane by which the gods appeared and disappeared in a scene in Greek theatre. The crane essentially was a refinement of the idea that gods were at times visible at other times not, and appeared above mere mortals. The inclusion of gods in plays was to contrast myth with human behavior, at least in the case of Euripides. In his plays, a god was identified by literally being flown in – physically removed from earth-bound human beings. J. Michael Walton, *op. cit.* p. 38–39. (Chapter 3: the Stage).

<sup>331</sup>In Roman theatre not only were there vaults beneath the seats, but the seats were in line with the stage ground, making a relationship between the seating and the total height of the stage building; this made the seating arrangement and the stage itself into a coherent unit. This is evident from Vitruvius' stage design (see Vitruvius, *op. cit.* p. 147). (Book 5, Ch. 6, – plan of the theatre). The stage had two different sections for seating: the lowest section would accommodate and be in line with the first and second register of the stage itself, while the upper section of seating accommodated and would be in line with the upper register of the stage. Richard Green and Eric Handley, *Images of the Greek Theatre*, London, British Museum Press, 1995, p. 86-109 (Chapter 8: Traditions of Western Theatre).

<sup>332</sup>Carlo Ludovico, *Ragghianti Pittori Di Pompei*, Milan, Edizioni Del Milione, 1963, plate 43, p. 38. In this image, Medea is looking sideways outside the picture, and her gaze – as well as everybody's else's gaze – is specifically directed in order to seal a composition inside the frame or to appeal to external elements. In table G a number of different heads are shown, their eyes clearly directed. (See Andreas Linfert, *op. cit.* "Wand aus den Stabianer Thermen, Pompeji", plate 10.) Linfert writes that in this particular (wall decorations from the Stabian thermal baths) Mural I, he observed that the figures, and particularly the centres of the figures, intersected with the architectural perspective. In another instance, see G.J. Kern, *op. cit.* p. 246-264. In the Scena from the Domus Aurea, abb. 16, I myself observed that the architectural perspective also clearly intersected with the figures at either the feet, centre of the body, naval or head. Kern also mentions that the signature of a painter was frequently defined by how he engaged the body in his compositions.

<sup>333</sup>What is true as a theory with respect to the ideal finds an echo in the realities of the room, which after all is a dining room for guests who will be shifting between standing and reclining around a central table. There is no more apt regard for the conjunction of ideal and real conceived for this particular dinning or reception room.

<sup>334</sup>G.J. Kern, *op. cit.* p. 246-263. Unlike my position, Kern argues for the fishbone model, not one with a vanishing point as we understand it, but a method of pictorial construction that was mobile and not dependant on one central vertical axis. The two diagonal axes could be constructed independently and appear to be almost converging because of the symmetrical construction of the pictorial representation. I think that his observation and conclusion is beautifully rationalized, since in many instances the two diagonals do not in fact perfectly coincide on a single vertical axis. However, I found that this problem did not exist when looking along the sightlines, since the shifting of the eye's attention accommodates it. The end result is that the central axis existed in space as well as on the wall. Considering the Ixion Room, I like the idea of looking at the side of the room independently as well as collectively. I think that the decorations' pictorial considerations do not exclude either. Looking at each wall independently is more how one would experience the architectural view. Kern's reading of Panofsky is that despite his refusal to accept the centre of the circle via Vitruvius, and as Kern presents it, as the point of centre towards which all sides looking down move, Panofsky explains sight as originating in the eye and he explains variations of diagonals as due to the fact that the ancients imagined the form of the picture as projected inside a sphere. However, the end result is very similar. Kerns' diagonals are evenly spaced, while Panofsky's diagonals become expanded near the central line.

<sup>335</sup>*Pompei Pitture E Mosaici*, Rome, Encyclopaedia Italiana, Vol. V, 1995, p. 489- 492. In the House of the Vetti, in the oecus (e) in the upper register on the north wall, Zeus is sitting on a throne looking up into the sky above, while on the adjoining wall Leda holding the swan is looking down at the centre of the space in the room.

<sup>336</sup>Elaheh Kheirandish, *op. cit.* Volume I. Proposition 12 in the Greek translation states that those angles that are to the right appear to pass on the left and those to the left appear to pass on the right.

<sup>337</sup>*Ibid.* p. 32, 40. Propositions 10 and 11 are in the text the same as in Ver Eecke's translation, but is numbered propositions 9 and 12, p. 8 and 9.

<sup>338</sup>Lucretius, *op. cit.* p. 104 and 106 respectively (Book Four).

<sup>339</sup>*Ibid.* p. 80, 84, 88: propositions 26, 27 and 28. In Ver Eecke's translation, p. 19-20, these are numbered proposition 25, 26, 27.

<sup>340</sup>Vittorio Spinazzola, *Le Arte Decorative in Pompei e nel Museo Nazionale di Napoli*, Milan, Casa Editrice d'Arte Bestetti e Tumminelli, 1928, p. 16, ill. 17, p. 111.

<sup>341</sup>J. Michael Walton, *op. cit.* p. 31-40.

<sup>342</sup>*Ibid.* p. 31-36.

<sup>343</sup>*Ibid.* p. 48 – 49.

<sup>344</sup>Plato, *Timaeus and Critias*, Sir Desmond Lee (trans.), London, Penguin Classics, 1977, p. 63: *Timaeus*, p. 12: *the human body: head and limbs*. The example given is that of a human face looking as one looks into a mirror. When the mirror is concave, the rays change sides. This idea works well with Panofsky's idea of picturing the internal projections of a sphere was a concept that was further developed in the northern renaissance perspective, interpreted by Svetlana Alpers as the passive gaze. See Svetlana Alpers, *The Art of Describing*, London, John Murray, 1983, p. 44.

<sup>345</sup>*Ibid.* p. 63.

<sup>346</sup>Cicero, *op. cit.* p. 110.

<sup>347</sup>*Ibid.* p. 97, line 101 (Book Four).

<sup>348</sup>*Ibid.* p. 102-103 (Book Four). In David C. Lindberg, *op. cit.* p. 3, Lindberg succinctly summarizes the Epicurean natural philosophy: *without material efflux, it isn't atomism*.

<sup>349</sup>Svetlana Alpers discusses the concepts of northern and southern renaissance vision. Svetlana Alpers, *op. cit.* p. 38-53.

<sup>350</sup>Aristotle, *op. cit.* p. 615 (Ch. 2: *Memory and Reminiscence*: *parva naturalis*, section 452b, line 11-19).

<sup>351</sup>David. C. Lindberg, *op. cit.* p. 14-15. (Cohen and Drabkin, *Source Book*, p. 261-62. The entire *Catoptrica*, in William of Moerbeke's Latin translation).

<sup>352</sup>Richard Gregory, *Mirrors in Mind*, Oxford, W.H. Freeman, Spectrum, 1997, p. 107.

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<sup>353</sup>*Ibid.* p. 107.

<sup>354</sup>Lucretius, *op. cit.* p. 99.

<sup>355</sup>*Ibid.* p. 73.

<sup>356</sup>Morris Klein, *Mathematics in Western Culture*, London, Oxford University Press, 1982, p. 25-35. Aristotle, *op. cit.* p. 65-107. (Book I, Ch. I-27). In the section *Analytica Priora* Aristotle applies deductive reasoning when he explains the nature of syllogizing: "[...] A dialectic premise is the given choice between two contradictories; a man can proceed by questioning, but when he is syllogizing it is the assertion of that which is apparent and generally admitted ... Syllogism is discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so. I mean by the last phrase that they produce consequence, and by this, that no further item is required from without in order to make the consequence necessary. [Book I Ch. I, p. 65-66] [...]" that in every syllogism there must be a universal premise, and that a universal statement is proved only when all the premises are universal. Book, I Ch.24, p. 81.

<sup>357</sup>*Ibid.* p. 12. Klein describes the relationship between the Greeks' invention of mathematics and Rome's lack of mathematical invention as due to Rome's pragmatic and practical bias that restricted interest to engineering and other matters of application.

<sup>358</sup>D. Brendan Nagle, *op. cit.* p. 241. Hero of Alexandria (first century B.C.E.) invented an early form of the theodolite, the *dioptra*, a portable water level for use in surveying.

<sup>359</sup>John R. Clarke, *op. cit.* p.7.

<sup>360</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 70-71.

<sup>361</sup>Morris Klein, *op. cit.* p. 56-57.

<sup>362</sup>D. Brendan Nagle, *op. cit.* p. 259-260. What is important to remember is the notion that the gods inhabited all conceivable space, and it was the Roman citizen who was always subject to this sub-ordering of space. It should also be remembered that the Romans in their conquest adopted the local gods and brought them to Rome, adopting them with special ceremonies.

<sup>363</sup>Vitruvius, *op. cit.* p. 4 -5.

<sup>364</sup>*Ibid.* p. 14-16 (Book I, Ch. 2, 1-6). For Jupiter-Sun or the Moon: "*For these are gods whose semblances and manifestations we behold before our very eyes in the sky when it is cloudless and bright.*" He goes on to suggest that for Minerva, Mars, and Hercules, the Doric style is appropriate because it represents virility and strength. On the other hand, Venus, Flora and the Nymphs should be represented by the Corinthian order because they are delicate divinities – requiring slender outlines – and for Juno, Diana, and Bacchus – and other kinds of middle gods – a mixture of both Doric and Corinthian is appropriate.

<sup>365</sup>*Ibid.* p. 6. (Book I, Ch.I, 4)

<sup>366</sup>Benno Artmann, *Euclid; the creation of mathematics*, New York, Springer Verlag, 1999, p. 3-10. In Book I, *Foundations of Plane Geometry*, Euclid gives definitions of basic concepts such as point, line, angle, various triangles, rectangles and those lines – parallel lines – that do not meet at a common point. There follow two axioms: “things that are equal to the same thing equal each other.” And: “the sum of the interior angles of triangles is equal to two right angles”.

Book II, *The Geometry of Rectangles*, is concerned with how to construct a square equal to a given rectilinear figure. Book III, *the Geometry of Circles*, involves the theory of quadrangles and circles, and states the equality of all angles of the same segment of a circle. Book IV, *Regular Polygons in Circles*, demonstrates how, for example, to inscribe a rectangular figure about a circle or visa versa. In Book V, *The General Theory of Magnitudes in Proportion*, speculates on the relationship of areas of circles, angles, lines, solids, numbers, and time, elaborating a theory of relational proportions. Book VI, *The Plane Geometry of Similar Figures*, is essentially plane geometry with a set of pre-worked theorems connecting lines and areas of similar triangles. Book VII is basic arithmetic. Book VIII and Book IX, *Numbers in Continued Proportions*, includes the *Theory of Even and Odd Numbers and Perfect Numbers*. This theory concludes with the construction of even numbers as perfect.

Book X *Incommensurable Line Segments* – the largest book and in fact representing one quarter of the whole of Euclid’s *Elements* – tellingly concerns working out a method for finding a mathematical criterion to obtain commensurability. In it, Euclid states: “If two magnitudes have to one another the ratio, which a number has to a number, the magnitudes will be commensurable.” Book XI, *Foundations of Solid Geometry*, treats lines, planes, parallelism, orthogonality, parallelepipedal solids and solid angles. Book XII, *Areas of Volumes*, discusses *Eudoxus’s Method of Exhaustion*, demonstrating methods to determine the area of a circle in relationship to a square or the volume of a pyramid. In Book XIII, *The Platonic Solids*, Each of the regular solids is treated in a separate two-part theorem: to construct the solid and to comprehend it in a given sphere.

<sup>367</sup>Morris Klein, *op. cit.* p. 57.

<sup>368</sup>Aristotle, *op. cit.* p. 15-17. (Categories Ch.5)

<sup>369</sup>Rudy Rucker, *Infinity and the Mind; science and philosophy of the Infinite*, Princeton, New Jersey, Princeton University Press, 1995, p. 1-35.

<sup>370</sup>*Ibid.* p. 3. *apeiron*: “The original chaos out of which the world was formed”

<sup>371</sup>*Ibid.* p. 3.

<sup>372</sup>Lucretius, *op. cit.* p. 33 (Book I, 958)

<sup>373</sup>Morris Klein, *op. cit.* p. 57.

<sup>374</sup>For Aristotle, the infinite is imperfect, unfinished and confused – and the closest that Aristotle gets to the infinite is the potentially possible or potentially infinite as opposed to the actual infinite. (Rudy Rucker, *op. cit.* p. 3, 10, 25.)

<sup>375</sup>Petronius, *The Satyricon*, and Seneca, *The Apocolocyntosis*, J.P.Sullivan (trans.), London, Penguin, 1986, p. 56.

<sup>376</sup>Lucretius, *op. cit.* p. 255 (Appendix C – Smallest Parts)

<sup>377</sup>Vitruvius, *op. cit.* p. 75.

<sup>378</sup>Lesley Adkins and Roy A. Adkins, *Dictionary of Roman Religion*, p. 70-71. The liver of a freshly sacrificed animal was interpreted with the aid of a bronze model. The non-protruding parts were divided into primary sections, which matched parts of the sky, and were subdivided into 42 divisions, each with names of the ruling deity written in Etruscan.

<sup>379</sup>Charles Singer, *op. cit.* p. 37- 44.

<sup>380</sup>Plato, *Timaeus and Critias*, p. 7- 25. In the introduction to Plato's *Timaeus*, Sir Desmond Lee, a classics scholar at Cambridge, remarks that in this seemingly benign phrase there is summed up a new world view that encompasses seeing the world in quantifiable and constructive terms and the creator's intentions revealed through the recognition of mathematical-geometric figures and patterns.

<sup>381</sup>Charles Singer, *op. cit.* p. 28.

<sup>382</sup>Charles G. Gross, *Brain, Vision, memory: tales in the history of neuroscience*, Cambridge, Mass., MIT Press, 1998, p. 11.

<sup>383</sup>Mark Rosenzweig, Arnold Leiman, S. Marc Breedlove, *Biological Psychology; an introduction to cognitive and clinical neuroscience*, Sutherland, Mass., Sinauer Associates, 1999, p. 264. At the optic chiasm, axons from the temporal halves of each retina continue into the optic tract on the same side. Axons from the nasal sides cross to the optic tracts on opposite sides.

<sup>384</sup>Charles G. Gross, *op. cit.* p. 11.

<sup>385</sup>*Ibid.*, p. 11.

<sup>386</sup>David C. Lindberg, *op. cit.* p. 12.

<sup>387</sup>Lucretius, *op. cit.* p. 97: Book I, line 958.

<sup>388</sup>Charles Singer, *op. cit.* p. 60. The natural spirit was derived from the liver after it had received nutrients from the intestines, the vital spirit was of the highest type because it had been mixed with air and was brought to the base of the brain, where it was charged with the third pneuma or animal spirit.

<sup>389</sup>*Ibid.* p. 15. Singer points to the passages on the body in Plato's *Timaeus*, 40-51. 3. *Prelude*. "The physical world has only a secondary reality, and knowledge of it is bound to be imprecise."

<sup>390</sup>Plato, *Timaeus and Critias*, p. 57.

<sup>391</sup>*Ibid.* p. 61.

<sup>392</sup>*Ibid.* p 61. Charles Singer, *op. cit.* p. 15.

<sup>393</sup>Plato, *The Republic* (The Republic 529d), A.D. Lindsay (trans.), London, Everyman, 1999, p. 220.

<sup>394</sup>*Ibid.* (The Republic 532c), p. 223.

<sup>395</sup>George W. Comer, *Anatomy*, New York, Paul B. Hoeber, 1930, p. 3.

<sup>396</sup>*Encyclopedia Britannica*, Volume 8, Chicago, University of Chicago Press, 1950, p. 400. Empedocles made, according to Aristotle, no distinction between percept and thought, and it was for Empedocles that the heart, not the brain, was the organ of consciousness.

<sup>397</sup>Charles G. Gross, *op. cit.* p. 21.

<sup>398</sup>Charles Singer, *op. cit.* p. 17-22. Aristotle's research was carried out on mammalian animals and fish. He wrote three important biological works, *The History of Animals, the Parts of the Animals, and the Generation of Animals*. He developed coherent theories of generation and heredity and founded comparative anatomy.

<sup>399</sup>Aristotle, *op. cit.* p. 699- (Metaphysics, Book I, Ch. 5, section 986a,b, 987a). Aristotle refers to Pythagoreans who declared on a set of contraries, which we find him applying in his rationalization of the heart over the brain. He positing two causes and two principles, calling them hot and cold, fire and earth, and suggesting that the hot has existence while the cold has nonexistence.

<sup>400</sup>Charles G. Gross, *op. cit.* p. 21.

<sup>401</sup>*Ibid.* p. 11-12, 13. Note the quote from Hippocrates.

<sup>402</sup>Charles Singer, *op. cit.* p. 29.

<sup>403</sup>*Ibid.* p. 33.

<sup>404</sup>*Ibid.* p. 40, 42-44.

<sup>405</sup>*Ibid.* p. 50.

<sup>406</sup>Vitruvius, *op. cit.* p. 69.

## End notes      Chapter II

<sup>1</sup>Ferruccio Canali, *The Basilica of Santa Croce*, Florence, Bonechi Edizione, 1954, p. 7.

<sup>2</sup>Giovanni Villani, *Cronica di Giovanni Villani*, Florence, Magheri, 1823, Vol. IV, p. 129-131, 361; Vol. VIII, p. 17.

<sup>3</sup>Visser writes that from all the different types of basilicas the Romans had designed, the Christians chose the oldest type with the narthex, nave and apse opposite the entrance, within which – or just in front of which – the Christians placed the altar. In that sense, the circulation within the Christian basilica could be thought of as a U-shaped route leading up one aisle, around the apse, and back down the other aisle. In these early Christian churches there were no rooms off the main walls, or even chapels. See Ferruccio Canali, *op. cit.* p. 18. The Basilica of Santa Croce, however, has now not only chapels all along the transept, but also in front of the walls and perpendicular to the entrance; on both the right and left nave, seven altars surrounded by classical frames were added in the sixteenth century as both monuments and tombs, Galileo's being among them. Margaret Visser, *The Geometry of Love: time space mystery and meaning in an ordinary church*, Toronto, Harper Perennial Canada, 2000, p. 54-56.

<sup>4</sup>Ferruccio Canali, *op. cit.* p. 8.

<sup>5</sup>Rona Goffen, *Spirituality in Conflict: Saint Francis and Giotto's Bardi Chapel*, University Park, Pennsylvania State University Press, 1988, p. 5. and Barbara Walker, *The Woman's Dictionary of Symbols and Sacred Objects*, San Francisco, Harper Collins, 1988, p. 38.

<sup>6</sup>White states that the temple is seen as prefiguring the Christian church. The sacraments, the only passage to Gods Grace from Man's Fall, are embodied in the sacrifice of the Mass upon the altar; the offer of Redemption and of possible Salvation through Gods Grace, are issued from the pulpit, the metaphor of the elevated state to come. John White, *Art and Architecture, 1250-1400*, Middlesex, England, Penguin, 1987, p. 315.

<sup>7</sup>Rona Goffen, *op. cit.* p. 49.

<sup>8</sup>Eve Borsook, "The Recovery of the Santa Croce Murals", Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, New York, Garland Press, 1998, p. 76.

<sup>9</sup>Baxandall applies the term Humanism – in the context of the fourteenth, fifteenth and sixteenth centuries – referring to those individuals who were primarily informed about literature, history and ethics in classical Latin and sometimes Greek, These early humanists described themselves primarily as orators or *rhetoricus*. Baxandall points out that when one language structure is amalgamated with another, in this case Latin and Italian, the effects are noticeable, not only in the use of language, but also in the priorities and emphasis one gives to picturing things. Implied in this is the notion that the use of classical Latin not only changed the literary sensibility, but also the nature of picturing – as in the case of Giotto. It is in this way that Giotto becomes part of the humanist tradition of the late medieval or early renaissance period. Michael Baxandall, *Giotto and the Orators: humanist observers of painting in Italy and the discovery of pictorial composition, 1350-1450*, Oxford, Clarendon Press, 1971, p. 45-50.

<sup>10</sup>John White describes the Monastery of which the St. Croce Basilica was a part, the university of the Franciscans. John White, *op. cit.* p. 335.

<sup>11</sup>Rona Goffen, *op. cit.* p. xv – xvii.

<sup>12</sup>These images were not only venerated for their own sake, but are considered a continuation of the original representation that had already been associated with performing miracles, and would continue to be asked to perform them. They were physically embraced, kissed, and adored like personages, and in that sense were approached, as Belting writes, with *personal supplication*. Hans Belting, *Likeness and Presence: a history of the image before the era of art*, Chicago, The University of Chicago Press, 1994, p. 6.

<sup>13</sup>In this liturgy, Bonaventure expresses his belief in the celebration of the life of St. Francis through the ornamentation of the Basilica and Chapel. Bonaventure of Bagnoregio, "The Major Legends of St. Francis", Regis J. Armstrong, J.A. Wayne Hellman, William J. Short (eds. & trans.), *Francis of Assisi: early documents*, Vol. II, New York, New City Press, 1999, p. 642-643.

<sup>14</sup>Dante Alighieri, *The Divine Comedy, Volume III Paradiso, Canto XXX, 124, 124-126*, Melville B. Anderson (trans.), Oxford, Oxford University Press, 1933, p. 587.



<sup>15</sup>John White interprets these lines to mean that when Dante spoke of Giotto "...he was recognizing the newly gained pre-eminence of the one artist whose name can in any sense stand on a level with his own; of a man whose fame, like his, would be increased instead of diminished by the achievements of his successors. He was also unwittingly preparing the ground for a pattern of art history, firmly centred on Florence..." John White, *Art and Architecture, 1250-1400*, p. 307. "Ovana gloria dell'umane posse, Com'poco verde in su la cima dura, se non é giunta dall'etati grosse! Credette Cimabue nella pittura, tener lo campo, ed ora ha Giotto il grido, si che la fama di colui é oscura." (Pur. xi. 91-6)

<sup>16</sup>Dante Alighieri, *op. cit. Volume II: Purgatorio, Canto XI, 91-99*, p. 107.

<sup>17</sup>Benno Artmann, *Euclid; the creation of mathematics*, New York, Springer Verlag, 1999, p. 76.

"Like the geometer, who deep in thought applies himself / To measure the circle, and cannot find. However much he thinks the principle in need, ..."

<sup>18</sup>Dante Alighieri, *op. cit. Volume I: Inferno*.

<sup>19</sup>Warren Ginsberg, *Dante's Aesthetics of Being*, Ann Arbor, The University of Michigan Press, 2000, p. 115-119.

<sup>20</sup>In Anderson's notes, he suggests that the circling that appeared to Dante was the effluence of divine reflected light that seemed to contain our effigy: the emblem of the god-man [Christ]. While the circle is the image of perfection, the circling is that of beatitude. Dante's absorption is that of the Geometer who would square the circle in studying the conformity of the effigy and the circle, and it is accomplished – but only in a flash that cannot last: meaning that the state of Grace or ecstasy necessitates the repetition of the act over and over again. Dante Alighieri, *op. cit. Volume III: Paradiso, Canto XXX, 124-138*, p. 587.

<sup>21</sup>"The vesica can represent the seed. From its germination spring forth the (coloured) circles (the root) and the polygons (the germ giving rise to the branches) ... construct the polygon world... and indicate the location of the pentagon. The over lapping circle an excellent representation of a cell, or any unity in the midst of becoming dual – form a fish shaped central area... Christ as fish ... symbolically this region which joins together heaven and earth, above and below, creator and creation." The temple of its time is the Gothic cathedral. Robert Lawlor, *Sacred Geometry*, New York, Thames and Hudson, 1989, p. 33-35.

<sup>22</sup>J.V. Field, *Invention of Infinity: mathematics and art in the Renaissance*, Oxford, Oxford University Press, 1997, p. 9.

<sup>23</sup>Giorgio Vasari, *The Lives of the Artists*, George Bull (trans.), Middlesex, England, Penguin, 1975, p. 64.

<sup>24</sup>As an aside, it is tempting to view Giotto's placement of the painting over the entrance to the Chapel as both a quote and a riposte to Dante's famous lines over the gates of Hell: *Abandon Hope All Ye Who Enter Here*.

<sup>25</sup>"The internal architectural perspective is co-ordinated with the viewpoint of the observer as he enters." John White, *The Birth and Rebirth of Pictorial Space*, New York, Harper & Row, 1972, p. 72.

<sup>26</sup>Angelo Tartuferi, *Giotto: chronology of Giotto's works*, Florence, Galleria dell Accademia, 2000, p. 19.

<sup>27</sup>Peter Murray, "On the Date of Giotto's Birth", Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, New York, Garland Publishing, 1998, p. 103.

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<sup>28</sup>Thomas Aquinas (1224/5- 1274)

<sup>29</sup>Dante Alighieri, *op. cit. Volume III: Paradiso*, p. 107.

<sup>30</sup>Margaret Visser, *op. cit.* p. 56.

<sup>31</sup>I. Giganti, *Della Pittura*, Florence, Alberto Peruzzo Editore, 1986. (Photography: Della Società Scala Fierenze) The fresco *Le Stimate* in S. Croce, the capella Bardi measures 390 cm wide x 370 cm in height x 450 cm deep.

<sup>32</sup>Laura Cavazzini, *Giotto*, Florence, Guinti Gruppo Editoriale, 1998, p. 58.

<sup>33</sup>Murray also makes an argument stating that the date of Giotto's birth that has most frequently been quoted comes from Vasari's *Lives of the Artists* and has questionable sources. While Dante's son Pietro does not mention his father's friendship with Giotto, it is because his commentary on his father's work does not go as far as the *Purgatorio*, where Giotto is mentioned. (*Purgatorio* XI, 94) Peter Murray, *op. cit.* Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 97-107.

<sup>34</sup>The only absolutely certain date for the Bardi frescoes is the inclusion of St. Louise of Toulouse who was canonized in that year. Francesca Flores D'Arcais, *Giotto*, Raymond Rosenthal (trans.), New York, Abbeville Press, 1995, p. 330.

<sup>35</sup>Frankfurter rationalizes the dating of the Bardi chapel to the fact that it was painted in the technique of fresco only, meaning it was a direct sure single gesture with no repainting with secco, and also a fast physical process appropriate to an aging Giotto. Secondly, the internal problems within the Franciscan Order were resolved only after the death of St Francis; and finally, the canonization of St. Francis in 1327. This places the commission by the influential Bardi family of the chapel, based on the theme of St. Francis' life, after this date. Alfred Frankfurter, "Giotto Emerges: old myths and new reality", Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, p. 12.

<sup>36</sup>John White, *Art and Architecture, 1250-1400*, p. 334.

<sup>37</sup>The colour of these stained glass windows is the traditional red, green, and blue, with variations in hue. A clear border around sections of the figure and design constructs a keyhole view of the figures and their actions. Emma Micheletti, *Santa Croce*, Florence, Becocci Editore, 1998, p. 73-74.

<sup>38</sup>Nicola Liddiard (ed.), *The Visual Dictionary of Buildings*, London, Doeling Kinderly, 1992, p. 20-22.

<sup>39</sup>Francesca Flores D'Arcais, *op. cit.* p. 325.

<sup>40</sup>Here Rintelen speaks of four life-size figures of the Saints, but fails to name them. Friedrich Rintelen, *Giotto und die Giotto Apokryphen*, Munich-Leipzig, Georg Müller, 1912, p. 155.

<sup>41</sup>White makes the point that these gestures to the Gothic arch are an acknowledgement to the Gothic edifice of St Croce. He also remarks on the positive replacement of the ribbing of the vault, no longer as a negative space. See the Paduan schema. John White, "The Birth and Rebirth of Pictorial Space", Laurie Schneider (ed.), *Giotto In Perspective*, Englewood Cliffs, New Jersey, Prentice Hall, 1974, p. 127-141.

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<sup>42</sup>Chiara Favarone joined St. Francis in early 1211 and was given the Church of San Domiano, where she founded the Order of the Poor Clares. Lawrence Cunningham, *Saint Francis Of Assisi*, San Francisco, Harper & Row, 1981, p. 117.

<sup>43</sup>Francesca Flores D'Arcais, *op. cit.* p. 325.

<sup>44</sup>Ferruccio Canali, *op. cit.* p. 58-61.

<sup>45</sup>Richard Offner, "Giotto Non Giotto", *Burlington Magazine*, vol. LXXIV, 1939, p. 141.

<sup>46</sup>*Ibid.* p. 151. Offner writes: "Giotto's eye is never pre-occupied with an outer object, but always reflects an inner state. The expression accordingly never responds to the moment, but is related to eternity."

<sup>47</sup>As Cunningham notes, the word 'legend' derives from the word *legere* to read, and the writings of and about St. Francis were meant to be read to anyone, but primarily the illiterate. This makes Francis both man and myth. St. Francis was born in Assisi in 1182 to merchant class parents. His father was a cloth merchant, making the renunciation of clothes even more meaningful. Lawrence Cunningham, *op. cit.* p. 26.

<sup>48</sup>Thomas of Celano, "The Life of the Saint Francis", Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume I, p. 171; Thomas of Celano, "The Remembrance of the Desire of a Soul", *Ibid.* Volume I, p. 233; Bonaventure of Bagnoregio, "Legends and Sermons about St. Francis", *Ibid.* Volume II, p. 495-759.

<sup>49</sup>Rona Goffen, *Spirituality and Conflict: Saint Francis and Giotto's Bardi Chapel*, University Park, Pennsylvania State University, 1988, p. 29-49, discusses the difference in interpretation between Celano and Bonaventure. Celano's second biography starts with the saintly Saint Francis after his conversion, leaving out his indulgent and undisciplined years as a youth.

<sup>50</sup>Lawrence Cunningham, *op. cit.* p. 58.

<sup>51</sup>It was in the Chapel of Porziuncola, just outside of Assisi, that Francis was introduced to the Gospel according to St. Matthew, Chapter VI. It is in the woods of Porziuncola that he and his followers set up home. It is also here that he decided to be placed naked on the ground to await Sister Death. John Brown, Reverend, *The Self-Interpreting Bible: Old and New Testament, The Authorized Version*, London, Blackie and Son, 1844, p. 968.

<sup>52</sup>According to Uglio di Monte Santa Maria, Francis himself made elaborate and costly preparations for a military expedition in the year 1205 for a small war against the city of Perugia. With a dominating father and a disabling social tradition, he was looking for a way to establish his own sense of authority. Uglio di Monte Santa Maria, *The Little Flowers of St. Francis of Assisi*, W. Heywood (trans.), New York, Random House, 1998, p. xx.

<sup>53</sup>Cunningham notes that Francis conceived of his life as courting Lady Poverty. Two years after St Francis' death, an anonymous piece of literature appeared with the Latin title *The Sacrum Commercium*. Known also as *The Sacred Romance of Blessed Francis and Lady Poverty*, it is reputed that Dante took inspiration from this for the eleventh Canto in his tribute to St. Francis of Assisi, modeling Beatrice on "the most beautiful wife [Lady Poverty] you have ever seen. She will surpass every other woman in beauty and wisdom." Lawrence Cunningham, *op. cit.* p. 58-59.

<sup>54</sup>Duby writes that there were two models of marriages during the medieval period in question. The moral and ethical aspect of the social marriage was primarily put in place as a safeguard for the question of inheritance. Since it was the wife that entered a new household, it was important that it was only the man of the household who would fertilize her. Therefore a woman's adultery was looked upon more severely, while the husband was free to spread his seeds. Strictly maintaining the lineage was a way of protecting the patriarchy. However, *the house* was not willing to divide its inheritance with more than one son, unless the son brought through the marriage important inheritances and connections. Consequently, the younger brothers generally had no authority and were discouraged from taking legitimate wives. This discouragement also included the presence of a father who was still in control of the household. This was the case for St. Francis. In frustration, many young noblemen or wealthy merchant sons formed roving bands known as *Juvenas*, taking up knighthood and remaining bachelors. Gradually the Church became involved in the jurisdiction of marriage as a *solution of last resort*, and *conjugati* was the lowest rank of perfection in an institution that considered the *marital sacramentum* as a symbol of unity between God and his people. Marriage was tolerated as a solution to carnal lust, and the transgression of fidelity was severely disapproved of for both men and women. George Duby, *Medieval Marriage*, Elborg Forster (trans.), Baltimore, John Hopkins University Press, 1991, p. 4-18.

<sup>55</sup>Cunningham relates that St. Francis, in the autumn of 1206, while regularly visiting the Leprosarium of St. Lorenzo, stopped to pray in the abandoned and half ruined church of San Daiano. It is here that he heard Christ speak to him from the wooden Cross above the altar, commanding him to rebuild his house. Francis acted upon this command and, selling of some of his father's bolts of cloth, used the money to rebuild the church. His father, Pietro Bernardone, brought suite against him, upon which St. Francis – born Francesco Bernardone – denounced his father before the Bishop of Assisi. Lawrence Cunningham, *op. cit.* p. 115-116.

Bonaventure writes (see Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 643) that as St. Francis stood naked after he divested himself of his clothes the Bishop gave St. Francis a plain cloak of a farm worker, on which St. Francis drew a cross, the sign of Salvation, which "enabled him to get of the shipwreck of the world", adding it "was a worthy garment for a crucified."

<sup>56</sup>Thomas of Celano, "The Life of Saint Francis", Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume I, p. 182, 251. Thomas of Celano, in Book I, Chapter I, p. 229 writes: "*Francis from his earliest years was brought up by his parents proud of spirit, in accordance with the vanity of the world; and imitating their wretched life habits for a long time he became even more proud. For this evil custom has grown up everywhere among those who are considered Christian in name...as though by public law, that people seek to educate their children ... children, just hardly born, are taught by signs and words to do certain wicked and detestable things; ... when they are weaned, they are forced not only to speak but also to do certain things full of lust and wantonness ... none of them dare to conduct themselves in an upright manner ... for fear of being subjected to severe punishment.*" A lesson in childrearing!

<sup>57</sup>*Ibid.* p. 210.

<sup>58</sup>It should also be remembered that in Giotto's time most of the parishioners would have been illiterate and would not necessarily expect to read an image progression only from left to right as we expect today.

<sup>59</sup>Giotto was employed by the Franciscan Order for many different commissions, the largest of which are in Assisi, Padua, and Florence. He would therefore have been very familiar with the official text by Bonaventure of St. Francis' life. "He preached to the sultan the triune God and the one savior of all, Jesus Christ, with such great firmness, such strength of soul, and such fervor of spirit that the words of the gospel appeared to be truly fulfilled in him." See Bonaventure of Bagnoregio, "Major Legends of Saint Francis", Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 603.

<sup>60</sup>The story of St. Francis was also understood as a legend in a sense different to the use of the word today. (see Laurence Cunningham, *op. cit.* p. 26) Again, Cunningham points out that the early biographies of St. Francis were meant to be *heard-read*. Bonaventure was issued directives by the General Chapter in 1260 to write the definitive, official and exclusive text, with the order that all earlier biographies be burned. The death of St. Francis was responsible for a complete reorganization of the Order, and resolved the conflict between the spirituals and those that served the community. The official feast day of St. Francis also was responsible for a multitude of Choral legends and “*tendentious manifestos and mountains of writings and poems*”. See Bonaventure of Bagnoregio, “Major Legends of Saint Francis” and “The Minor Legends of Saint Francis”, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 620.

<sup>61</sup>It was obvious to the Sultan that St. Francis was of greater faith; he himself later converted to Christianity. Bruce Cole, *Giotto and Florentine Painting, 1280-1375*, New York, Harper & Row, 1976, p. 99.

<sup>62</sup>“If it is recalled to mind how he appeared to the brothers, although absent, ...at the chapter of Arles in the image of the cross. It should be believed that this was done by divine providence, so that his appearance in bodily presence it might clearly shine forth how present and open his spirit was to the light of eternal wisdom...reaching everywhere because of its purity...” Bonaventure of Bagnoregio, “Major Legends of Saint Francis”, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 620.

<sup>63</sup>Cole reflects on Giotto’s experiments in the Bardi Chapel as being set within a serene setting yet animated by the actions of the characters, as in the narrative of the Sultan, making the spatial play more complex. Bruce Cole, *op. cit.* p. 104-105.

<sup>64</sup>The impact of the reception of stigmata was also felt in the surrounding areas of mount La Verne, where bad weather, devastating crops and livestock returned to normal. See Bonaventure of Bagnoregio, “Major Legends of Saint Francis”, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 630-633.

<sup>65</sup>*Ibid.* p. 636.

<sup>66</sup>While Jerome was one of the brothers, the inspection of the stigmata was carried out by an official of the Church, according to Bruce Cole, *op. cit.* p. 107.

<sup>67</sup>Bonaventure of Bagnoregio, “Major Legends of Saint Francis”, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 644.

<sup>68</sup>John White, “Birth and Rebirth of Pictorial Space”, Laurie Schneider (ed.), *op. cit.* p. 135.

<sup>69</sup>A Seraph is one of the celestial beings hovering above God’s throne in [Isaiah’s vision Isaiah 6]

<sup>70</sup>Bonaventure of Bagnoregio, “Major Legends of Saint Francis”, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 632.

<sup>71</sup>According to Bellosi, an excellent reproduction of *The Stigmatization of St. Francis*, now in the Louvre, is an earlier version, by the Giotto workshop, of the version in Santa Croce in Florence. The representations of the stigmata marks are also round. See also Sarel Eimerl, New York, Time Life Books, p. 68. Another clear and large reproduction that confirms the tradition of making the stigmata marks round, in the case of this earlier version probably from the late 1250’s by the Florentine painter Coppo di Marcolvaldo titled *Crucifix*. The nails themselves were not neatly round as they are today, but rather oblong from the side and irregularly roundish from the top. Luciano Bellosi, *Giotto*, Florence, Scala, 1981, p. 27.

<sup>72</sup>Thomas of Celano, *op. cit.* Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume I, p. 264.

<sup>73</sup>Barbara Walker, *op. cit.* p. 375.

<sup>74</sup>*Ibid.* p. 86.

<sup>75</sup>Angelo Tartuferi, *Giotto*, Florence, Giunti, 2000, p. 17: Giotto, c. 1300, St. Francis preaching to the birds from a detail of *St. Francis Receiving Stigmata*, The Louvre, Paris.

<sup>76</sup>Julian Speyer, "The Life of Saint Francis", Chapter XI, Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 363. Speyer was an English nobleman drawing his poetic reflections from Thomas Celano. (note: underlining in the quotation is my emphasis)

<sup>77</sup>Richard Tamas, *The Passion of the Western Mind*, New York, Harmony Books, 1991, p. 201.

<sup>78</sup>St. Francis is the presentation of proof for the unbelievers – receiving stigmata as an act of empirical demonstration, according to Bonaventure of Bagnoregio, "Major Legends of St. Francis", Regis J. Armstrong and collaborators (eds.), *op. cit.* Volume II, p. 651.

<sup>79</sup>St. Augustine, *Confessions*, Book XIII, 9, R.S. Pine-Coffin (trans.), London, Penguin, 1961, p. 326.

<sup>80</sup>The word *doxa* was more recently re-interpreted by Roland Barthes to describe a petrified formation of a given society; since the *doxa* therefore threatens the society with an endgame, it must constantly be countered by innovation or *para-dox*. See Joseph Childers and Gary Hentzi (eds.), *The Columbia Dictionary of Modern Literary and Cultural Criticism*, New York, Columbia University Press, 1995, p. 90.

<sup>81</sup>Barolsky states that Vasari frames Giotto's father in a comparison with other fathers, real or imagined, who are not willing to let their sons become artists. He also describes Giotto's climb from the lowly shepherd's son, related to Christ himself, who becomes intimate enough with the King of Naples, having worked for king and Pope, to show his exalted position in society. Vasari points out that Giotto also extends the artistic lineage of Cimabue, as every artist coming after him must pay homage to his contribution. The book is an interesting take on Vasari's mythmaking. Paul Barolsky, *Giotto's Father and the Family of Vasari's Lives*, Pennsylvania, Pennsylvania State University Press, 1992, p. 20-24.

<sup>82</sup>Saler writes that there are a number of theories of belief. The classical mental state theory proposes that when one believes, something happens that alters one's mental state. Propositions in mind and believing become a mental act. The disposition theory suggests that when someone believes something, that person will than act – or be ready to act on it. Eliminativism claims that beliefs, desires and other mental states do not exist, except as fictional propositions, deriving from mistaken assumptions of folk psychology (Churchland 1981). The generalized Cognitive theory differs from classical mental state theory by being totally physicalist or materialist in orientation. And when cognitivists speak about the mind, they are speaking about functional aspects of physical objects, framing linked concepts of mind/brain (Dennett, 1998, 97). Beliefs are best to be considered as abstract objects, rather like centres of gravity. Benson Saler, "On What We May Believe about Beliefs", Jensine Andresen (ed.), *Religion in Mind: Cognitive Perspectives on Religious Belief, Ritual, and Experience*, Cambridge, Cambridge University Press, 2001, p. 47-69.

<sup>83</sup>Benson Saler, *op. cit.* Jensine Andresen (ed.), *op. cit.* p. 60. See also Ilkka Pyysiainen, "Cognition, Emotion, and Religious Experience", Jensine Andresen (ed.), *op. cit.* p. 71-93.

<sup>84</sup>Pascal Boyer in his *The Naturalness of Religious Ideas*, Berkeley, University of California Press, 1994, notes that religious ideas are likely to incorporate some counterintuitive elements, and counter-intuition across cultures and time can make it difficult to translate truth, values, and so on. I find a parallel to the idea of counter-intuitive notions of belief in the idea of believing in projected pictorial space as real space. Counter-intuition must have a relationship to the suspension of belief, although I have not yet come across anyone mentioning it.

<sup>85</sup>“Space – does it belong to the primal phenomena at the awareness of which men are overcome, as Goethe says, by an awe to the point of anxiety? For behind space, so it will appear, nothing is given to which it could be traced back. Before space there is no retreat to something else. The special character of space must show forth from space itself.” Christopher E. Macann, *Critical Heidegger*, London, Routledge, 1996, p. 122.

<sup>86</sup>For a discussion of the cognitive theory of religion, see Pascal Boyer, *op. cit.*

<sup>87</sup>Benson Saler, *op. cit.* Jensine Andresen (ed.), *op. cit.* p. 63. To continue the quotation [...] People, moreover, are likely to know more about religious beings than is transmitted through socialization and enculturation. Indeed, the richness and saliency of religious ideas are likely to be underdetermined by culture. That is largely because people make inferences on fragmented material basing their enrichments of religious ideas on prior ontological assumptions. Individuals tend in many cases to rework ideas rather than simply accept them.

<sup>88</sup>According to Boyer, it is important to keep in mind that there is a difference between the cognitive approach, which is dedicated to describing processes that lead people to ideas that they entertain, and the epistemic approach, which is an attempt to say something about the world. The mistake is made when mental representations under consideration are actually properties of idealized epistemic descriptions. *Ibid.* p. 65. See Pascal Boyer, *op. cit.* p. 229.

<sup>89</sup>Joseph LeDoux, *The Emotional Brain: mysterious underpinnings of emotional life*, New York, Simon & Shuster, 1998, p. 296.

<sup>90</sup>Searle writes that the belief in an occurrent reality that consists of unconscious mental states, and that is distinct from background capacities, is an illusion based largely on the grammar of our language. John R. Searle, *The Rediscovery of the Mind*, Cambridge, Mass., MIT Press, 1992, p. 187.

<sup>91</sup>Discusses neural ingredients of conscious emotional experience from direct input, from sensory and higher-order processing regions, and cortical and sub-cortical areas and their feedback. Joseph LeDoux, *op. cit.* p. 296.

<sup>92</sup>Pomian discusses cognition as a model of vision, and vision relating immediately between the soul and the object of either its sensory or intellectual gaze. In this way, faith superimposed itself on cognition, and divine illumination superimposed itself on natural light, whether it was physical or metaphysical, through force – in the force of directed lines of force. Krzysztof Pomian, “Vision and Cognition”, Caroline A. Jones and Peter Galison (eds.), *Picturing Science Producing Art*, New York, Routledge, 1998, p. 211–215.

<sup>93</sup>John R. Searle, *Intentionality: an essay on the philosophy of mind*, Cambridge, Cambridge University Press 1983, p. ix.

<sup>94</sup>Damasio writes that feelings start out as patterns of behavior that are set down chemically and neurally – transported by chemical molecules in the bloodstream and electromagnetic signals along nerve pathways. That is how numerous life processes are signaled to the brain, and represented in the numerous maps of the circuit of nerve cells located in specific brain sites. By that point it has reached the ‘tree-tops’ of life regulation, the level at which feelings begin to coalesce. Antonio Damasio, *Looking for Spinoza: joy, sorrow, and the feeling brain*, Orlando, Fla., Harcourt, 2003, p. 277–279.

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<sup>95</sup>“Some emotion related reactions respond to an object within the organism. The range of reaction encompasses not only highly visible emotions such as fear, anger but also drives motivations and behaviors associated with pleasure and pain. Emotions are part of the mechanisms that promote equilibrium in the body and response to danger, however emotions in specific contexts and intensity can be counterproductive, ie anger, or sadness today.” *Ibid.* p. 39.

<sup>96</sup>For Searle, intentional phenomena such as meanings, understanding, interpretations, beliefs, desires, and experiences only function within a set of background capacities that are not in themselves intentional. John R. Searle, *The Rediscovery of the Mind*, p. 175.

<sup>97</sup>Damasio suggests that we have six universal feelings that hail from six universal emotions: namely fear, anger, sadness, disgust, surprise, and happiness. However, we do not necessarily experience all of these all of the time. There is a secondary set of emotions that are not so strongly defined, but set the general physical tone of our being. These less defined emotions, because they are not in the foreground of our mind, are termed ‘background perturbations’ or background feelings. Antonio Damasio, *The Feeling of What Happens: body and emotions in the making of consciousness*, New York, Harcourt Brace, 1999, p. 285–286. “A Note to Background Feelings.”

<sup>98</sup>John R. Searle, *The Rediscovery of the Mind*, p. 175–196.

<sup>99</sup>*emic*: pertaining to or being a significant unit that functions in contrast with other units in a language or other systems of behavior.

<sup>100</sup>This is an important issue for the nineteenth century – a remark I will be taking up in the chapter on Monet’s *Nymphéas*.

<sup>101</sup>See Antonio Damasio, *Looking for Spinoza: joy, sorrow, and the feeling brain*, p. 119, on the question of hallucinating the body.

<sup>102</sup>*Ibid.* p. 277–279.

<sup>103</sup>Nycole Paquin, *Le Corps Juge: science de la cognition et esthetique des arts visuels*, Montreal, XYZ Editeur, 1997, p. 56. Section: 1.3.2. Emotions: preferences, dispositions et propensions (theorie des emotions de Paul Dumouche)

<sup>104</sup>Antonio Damasio, *Looking for Spinoza: joy, sorrow, and the feeling brain*, p. 131-132.



<sup>105</sup>McNamara writes that frontal lobes specialize in emotional processing, and to the extent that religion involves emotion it must involve the frontal lobes. Religions are generally concerned with pro-social behavior, and are based on the idea that improved empathy and moral insight can be acquired via religious practice. Fundamental to moral choice, empathy and pro-social behavior is the ability to delay gratification of one's own impulses. Freud's prerequisite of social behavior is the ability to inhibit sexual and aggressive impulses. Children in tandem with their maturation acquire the ability to delay gratification. Empathetic kinds of behavior also are an important tool in predicting the behavior of others. Belief-fixation, central to religious cognition, when studied neuropsychologically, is connected with the frontal lobes and show that individuals respond differently to foreign or incompatible belief systems. Temporal lobe epileptics have multiple conversion syndrome and are unaware of internal inconsistencies regarding these different beliefs. On the other extreme, those with belief-fixation continuum are incapable of changing their beliefs, no matter how much evidence is brought forward to the contrary. These are usually due to frontal and temporal disconnection. In order for beliefs to persist, the subject must protect themselves from interfering contrary evidence. Religious practices activate the frontal brain network, and evidence shows that traditionally people engage in religion in order to engage the frontal lobe. There is evidence that people with strong religious feelings and prayer lead to better health in the elderly. The evolutionary origin of religion can be gathered by studying the evolution of the frontal lobes and associated functions through investigations such as Theory of the Mind. The origin of the notion of sin lies in the awareness of the self as the intending perpetrator of the act, a recognition of the unpleasant implication of the act for others – its moral repulsiveness – is added to the Theory of the Mind of God. Self-initiation, execution and self-monitoring in order to learn from it is all part of the central executive which can do nothing without the frontal lobes. Patrick McNamara, "Religion and the Frontal Lobes", Jensine Andresen (ed.), *op. cit.* p. 237-251.

<sup>106</sup>McNamara, *op. cit.* Jensine Andresen (ed.), *op. cit.* p. 237-251.

<sup>107</sup>According to Edgerton, since this is the first time that a consistent convergent perspective is seen in medieval art, it is assumed that an artist had perfected this technique. Samuel Y. Edgerton, Jr. *The Heritage of Giotto's Geometry*, Ithaca, N.Y., Cornell University Press, 1991, p. 59. Smart, Belting and Boskovits have commented on this also.

<sup>108</sup>*Ibid.* p. 69, 75.

<sup>109</sup>Antonio Damasio, *Looking for Spinoza: joy, sorrow, and the feeling brain*, p. 118, writes that on the matter of hallucinating the body: these hallucinations are not adaptive when they occur in sensory systems. What I am speaking about are not the same as might have occurred to St. Francis himself – i.e. visions, or hearing voices. See also Nitzza Yarom, *Body Blood and Sexuality: a psychoanalytic study of St. Francis's stigmata and their historical context*. New York, Peter Lang, 1992, p. 37, 83-93. For Yarom, St. Francis' expression was that of an inner urgency and deep down human knowledge that made his practical advice indispensable for a life in and for Christ. His canticles and instructions are in loving Jesus and Lady Poverty – Humility, Poverty, Simplicity, and Prayer are the principle four virtues: living in great austerity and perfect joy. From an analytical point of view, he had an obsessional neurosis, conversion hysteria – repression is a central mechanism of hysteria – with an unresolved Oedipal conflict involving an un-reconciled relationship between masculine and feminine tendencies that required a deep need to unite them. The hysteric does not remember facts: he remembers things in an impressionistic way, and is impressionable, reactive, to his environment through the obvious, the *visible*. *He thinks in pictures*.

<sup>110</sup>Panofsky writes: the representation of an inner space: clearly, a hollow body signifies more than a consolidation of objects. It signifies a revolution in the formal assessment of the representational surface. This surface is no longer the wall or the panel bearing the forms of individual things and figures, but is once again [I would not say once again here] the transparent plane through which we are meant to believe that we are looking into space, even if that space is bounded on all sides. Erwin Panofsky, *op. cit.* p. 55.

<sup>110</sup>Panofsky writes: "The impression that vision of space in northern Gothic painting lags behind the vision of space in contemporary sculpture is only an illusion. They stand quite on the same level, except that the means of expressing painting had to remain primarily in line, and areas of colour bounded by line." *Ibid.* p. 118, note 37.

<sup>111</sup>Boothe writes that for Giotto, Ockham's notion of reduction and simplification of framing would be a well-chosen perceptual device. Also, leaving out the spatial illusory dimension of the Assisi border simplifies the representations' spatial proposition. Ronald G. Boothe, *Perception of the Visual Environment*, New York, Springer Verlag, 2001, p. 291. See also Patricia Churchland, *Neurophilosophy: towards a unified science of mind/brain*, Cambridge, Mass., MIT Press, 1989, p. 250.

<sup>112</sup>Carmen C. Bambach, *Drawing and Painting in the Italian Workshop: theory and practice, 1300-1600*, Cambridge, Cambridge University Press, 1999, p. 152-153.

<sup>113</sup>P. Hoggett, *A Place for Experience: a psychoanalytic perspective on boundary, identity, and culture*, Environment and Planning D, Society and Space, 1992, volume 10, p. 345-356.

<sup>114</sup>According to the article by David Perett et al, outline is the primary means by which visual memory identifies an image. In an experiment with monkeys, when very simplified line drawings of monkey faces with strong and varied emotional expressions were shown to them, the monkeys responded to these as they would to pictures of the real faces. However, when the lines were not decipherable, they responded with confusion or not at all. David Perett et al, "When is a Face not a Face?", Richard Gregory and collaborators (eds.), *op. cit.* p. 95-122. See also Stephen M. Kosslyn, *Image and Brain: the resolution of the imagery debate*, Cambridge, Mass., MIT Press, 1994, p. 387. Kosslyn writes that image maintenance in visual memory works by repeating the appropriate representation time after time in the pattern activated system. The linear structure is less complex to recall than is the more complex image in all its detail.

<sup>115</sup>Herman Pleij, *Colours Demonic and Divine: shades of meaning in the Middle Ages and after*, Diane Webb (trans.), New York, Columbia University Press, 2004, p. 13. Pleij Herman Pleiji writes (p. 4-36) that the medieval mind understood that colour was essentially a quality that was manifested by the presence of light and was synonymous with divine revelation. Since divinity was located in heaven it is not surprising that the colour blue which began to become the most popular colour in the twelfth century continues to be the most popular colour world wide to this day. Although cultural preferences for a favorite colour other than blue exist, but are an exception, nevertheless a worldwide survey has shown that young children make their own subjective choices that vary greatly making colour preferences in adults culturally determined.

<sup>116</sup>*Ibid.*, p. 2-6.

<sup>117</sup>*Ibid.*, p. 24.

<sup>118</sup>*Ibid.*, p. 91-93.

<sup>119</sup>*Ibid.*, p. 65.

<sup>120</sup>*Ibid.*, p. 32.

<sup>121</sup>Hayden B. J. Maginnis, *Painting in the Age of Giotto: a historical reevaluation*. University Park, Pennsylvania State University, 1997, p. 94.

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<sup>122</sup>*Ibid*, p. 104-105.

<sup>123</sup>Herman Pleij, *op. cit.* p. 49, 75.

<sup>124</sup>*Ibid*, p.10.

<sup>125</sup>*Ibid*, p. 63.

<sup>126</sup>Hayden B. J. Maginnis, *op. cit.* p 94.

<sup>127</sup>Herman Pleij, *op. cit.* p. 49.

<sup>128</sup>*Ibid*, p. 77.

<sup>129</sup>*Ibid*, p. 84.

<sup>130</sup>*Ibid*, p. 88-89.

<sup>131</sup>Rona Goffen, *op. cit.* p. 61. Later on in the text, the author reveals how the rock miraculously opened up to give St. Francis entry as he was trying to escape the devil.

<sup>132</sup>Nick Zangwill, "Aesthetic Sensory Dependence", *British Journal of Aesthetics*, Vol. 38, No. 1, January 1998, p. 80.

<sup>133</sup>*Ibid*. p. 67. According to Zangwill, spatial purism is the extreme position that holds that only spatial form is aesthetically relevant. Giotto, with the clear articulations of his architectural constructions, gave no more pictorial importance to the architecture than to the figures that occupy it. In fact, one can draw the conclusion that the figures ultimately can be seen to be more important.

<sup>134</sup>John R. Smythies, *The Walls of Plato's Cave" the science and philosophy of brain, consciousness and perception*, Aldershot, Avebury Press, 1994, p. 171-192.

<sup>135</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, Cambridge, Mass., Cambridge University Press, 1986, p. 236.

<sup>136</sup>Anne Mueller von der Haegen, *Die Darstellungsweise Giotto's mit ihren konstruktiven Momenten Handlung, Figure und Raum im Blick auf das mittlere Werk*, Braunschweig, Howaldt, 1995, p. 71-72.

<sup>137</sup>Erwin Panofsky, *op. cit.* p. 118, note 37. See Villard de Honnenourt, *The Sketchbook of Villard de Honnenourt*, Theodore Bowie (ed.), New York, George Wittenbourne, 1959, p. 58-59. But in his understanding of pictorial representation, there is a mixture of both plan and elevation.

<sup>138</sup>Harvey Richard Schiffman, *Sensation and Perception; an integrated approach*, New York, Wiley, 1996, p. 271. Unlike the Ponzo illusion, there is no reversal.

<sup>139</sup>Michael Baxandall, "Petrarch: painting as the model of art", Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, New York, Garland Publishing, 1998, p. 221-225. See especially the section "Fillippo Vallani and pattern of progress".

<sup>140</sup>Sheena Rogers, "Variables that Effect Perception of Pictorial Space", William Epstein and Sheena Rogers (eds.), *Perception of Space and Motion* San Diego, Academic Press, 1996, p. 127-134. Viewing from a stationary point, Gibson concluded, is the only way to prevent distortions of virtual space.

<sup>141</sup>Rogers writes that perceived depth varies systematically with perpendicular displacement of viewing position in all directions. Most authors have concluded that these changes of perception support the hypothesis that geometry determines visual perception. Horizontal displacements that shift the eye from the station point to the left or right, parallel to the picture plane, result in the shearing of all angular relationships. As the eye moves laterally to the left, for example, points, lines, planes, in the virtual space of the picture shift to the right. Sheena Rogers, "Viewpoint-Dependent Transformations of Pictorial Space", William Epstein and Sheena Rogers (eds.), *op. cit.* p. 127-134, 138-147.

<sup>142</sup>Boselie states that golden sections in experimental trials were not always the preferred proportions, and it would seem that artists are using these conventions simply because they are part of a larger myth – and for its unchallenged mathematical beauty. Frans Boselie, "Golden Section and the Shape of Objects", *Empirical Studies of the Arts*, Vol. 15 (2), 1997, p. 131-141. See also John Benjafield and Keith McFarlane, "Preference for Proportion as a Function of Context", *Empirical Studies of the Arts*, Vol. 15 (2), 1997, p. 143-151.

<sup>143</sup> Sheena Rogers, "Perceiving Pictorial Space", William Epstein and Sheena Rogers (eds.), *Perception of Space and Motion*, p. 123. Scaling and pictorial space: Questions of veridicality depend on availability of some metrics, observer's eye height, knowledge of the optic array-gradient, texture, size, optical slant, position below or above horizon.

<sup>144</sup>J.R.S. Wilson, *Emotion and Object*, Cambridge, Cambridge University Press, 1972, p. 8-27.

<sup>145</sup>George Dodds and Robert Tavernor, *Body and Building*, Cambridge, Mass., MIT Press, 2002, p. 107.

<sup>146</sup>Margaret A. Hagen, *op. cit.* p. 231.

<sup>147</sup>Anthony Kenny, *The Metaphysics of Mind*, Oxford, Clarendon Press, 1989, p. 55-56. See also for neural machinery behind emotions: Antonio R. Damasio, *Descartes' Error; emotion, reason, and the human brain*, New York, Putman, 1994, p. 139-148.

<sup>148</sup>According to Peterson, Christianity is based on the principle that a good deed does not necessarily make one a good person; a good person is simply good, and it is a mistake, writes Peterson, to suggest that a theological account of the human person is completely independent of biological and psychological characteristics. Nevertheless, there is an irreducible quality to a theological understanding – namely the relationship to God. Sin is not simply an immoral act for a theologian, it is a rebellion against God. Gregory R. Peterson, *Minding God: theology and the cognitive sciences*, Minneapolis, Fortress Press, 2003, p. 152-156.

<sup>149</sup>Greenfield writes that the iris automatically responds to emotions when the person feels good and positive towards another; the pupil opens up, and when the person feels negative it closes down. Susan Greenfield, *The Human Brain*, London, Weidenfeld & Nicholson, 1997, p. 107-108.

<sup>150</sup>Phillip W. Rosemann, *Understanding Scholastic Thought with Foucault*, New York, St. Martin's Press, 2000, p. 66-67.

<sup>151</sup>Empathy, Damasio writes, comes from a presumed mechanism that produces [mimics] projected feelings or sensations. For example, empathetic pain – what one might imagine to be another’s pain or joy and so on – can be successfully simulated by the body. Damasio calls this an “as-if-body-loop” mechanism. It involves internal brain simulation that consists of a rapid modification of on-going body maps. It is processed in the frontal/pre-motor cortices, a direct signal to the body-sensing brain regions. These neurons, their existence recently established, can represent in an individual’s brain the very movement the brain is observing in another individual; it then produces and transmits signals towards sensori-motor structures so that the corresponding movements are either “previewed”, in simulation mode, or actually executed. The simulated body states of empathy are even simulated to the point of mimicking the expression of the person’s facial expressions since the images of the person observed are identical – real to body states – even though the body itself is not experiencing the damage that the pain is responding to. Antonio Damasio, *Looking for Spinoza: joy, sorrow, and the feeling brain*, p. 115-118.

<sup>152</sup>Richard Gregory, “Black Boxes and Artful Vision”, Richard Gregory, John Harris, Priscilla Heard, David Rose (eds.), *op. cit.* Oxford, Oxford University Press, 1995, p. 7-27. The black box analogy of the brain is interesting here; as Gregory writes, it is necessary in order to know what lies inside, to observe what the system does and apply engineering knowledge *backwards* to infer the design. Most intriguingly, he writes that if the brain has entirely unknown tricks up its sleeve, these will have to be invented. “...for many phenomena of perception can be explained before the components and inner workings of the brain box are reached. Physical illusions occur bottom up, before the eye is reached. The inside out hollow mask, which is known to be hollow but looks convex, is about the knowledge we have of faces in the world, and is a bottom down illusion.”

<sup>153</sup>In Richard Gregory, *The Oxford Companion to the Mind*, Oxford, Oxford University Press, 1987, p. 220, it is noted that the concept ‘empathy’ is translated from the German *Einführung*, coined by the German philosopher and psychologist, Theodore Lipps. The aesthetic theory states that aesthetic pleasure *is an enjoyment of our own activity* in an object.

<sup>154</sup>“Certainly this renaissance of a feeling for the body can be interpreted as a kind of rapprochement with antiquity;...through Thomas Aquinas – with significant alterations – he revived Aristotle’s doctrine of space. For the architectural elements of the Gothic cathedral, conceived once again as bodies ...the statues in relief unfolded back into plasticity...along with the emancipation of the plastic bodies – the emancipation of the spatial sphere comprehending these bodies. ...this stage is still limited, just as the high Gothic church is decidedly a spatial construction and yet is still fragmented into a quantity of clearly divided individual bays, which only the late Gothic architecture will flow into one another. Yet the stage is already a fragment of a world, which even if is still built of limited and individually added cells of space, nevertheless already seems innately capable of an unlimited extension. Aristotle’s doctrine of space is taken up by the scholastic philosopher but revised... The premise of Aristotle’s finiteness of the empirical cosmos was replaced by the premise of the infinity of divine existence and influence...an actual infinite which in the beginning is confined to a supernatural sphere, but which could [and eventually was] in effect taken on for the natural world.” Erwin Panofsky, *op. cit.* p. 53-54.

<sup>155</sup>Harvey Richard Schiffman, *op. cit.* p. 200. On retinal expansion and rate of movement: as long as the object shape remains constant, it is understood that changing size is caused by motion in depth. The *best guess* solution.

<sup>156</sup>Phillip W. Rosemann, *op. cit.* p. 101. God is quite literally the author of reality. Reality is a text copied from the book of life – God’s wisdom itself. This bookishness initiates what becomes modernity’s dualism, namely text verses the real, individual-translator versus the community, the body versus the soul.

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<sup>157</sup>According to Schiffman, the auto-stereogram poses an unfamiliar, difficult task for the visual system, because you have to focus your eyes at a distance that is different from the location of the figure plane. Looking at stained glass windows, one is caught between the light that insinuates a space beyond, and the flat coloured planes of the images. Looking at both simultaneously gives one an uncertain sense of distance. Harvey Richard Schiffman, *op. cit.* p. 239.

<sup>158</sup>Phillip W. Rosemann, *op. cit.* p. 67.

<sup>159</sup>Ramachandran, in his experiments with fragmented figures of various sources, discovered that upon first reading it took several minutes to identify some of the images, but when these fragmented images were looked at a week later they were easily recognized. V.S. Ramchandran, "2 D or not 2 D – That is the Question", Richard Gregory and collaborators (eds.), *op. cit.*, p. 266; see also p. 249-267. This fractionalized view, in its smallest version in the Basilica, are the stained glass windows that are frequently surrounded – as in the Bardi Chapel – by a line of clear uncoloured glass that creates an extreme light-dark contrast that makes the window's stained glass oculus appear to be floating in space rather than anchored. Giotto's *Elija and the Chariot* in the main chapel is a very good example. See also Ferruccio Canali, *op. cit.*, p. 16-17.

<sup>160</sup>Peruch and Lapin write that understanding the environment can occur from both an egocentric and allocentric perspective. But with spatial misalignment, there are strategies that compensate for these difficulties, such as mentally rotating a map, or the necessity of real or mental rotation. Patrick Peruch and Evguéni A. Lapin, "Route Knowledge in Different Spatial Frames", *Acta Psychologica*, 84 (1993), p. 253-269.

<sup>161</sup>According to Hagen, lack of spatial gradient reference: when looking up, there would be a lack of gradient references by which size, distance, and angle determine the relationship to an object. Margaret A. Hagen, *op. cit.* p. 14.

<sup>162</sup>Campbell states that the egocentric frame is not only a body-centred frame or centred on part of the body, it is centred on the whole subject, and it determines also egocentric thinking. The axis that is formed by the egocentric frame has a particular significance, as I will demonstrate with St. Francis and Christ, for example, because this axis depends on a direct relationship between the subject's body-image and his ability to act. This is contrasted with the allocentric frame of reference, which means that the positions defining loci are external to the person in question. John Campbell, *Past, Space, and Self*, Cambridge, Mass., MIT Press, 1994, p. 5-25.

<sup>163</sup>Steel writes that the displacement of Plato's *Timaeus* by Aristotle's *Physics* revolutionized how nature was thought about. A whole new system of natural sciences became available to scholars that included principles of causality and movement, which were applied to biology, psychology, meteorology, the physics of both sub-lunar and celestial regions. Theologians were alarmed by this new view of nature, and for a time banned Aristotelian writings until they integrated and adapted them into the Christian worldview. Carlos Steel, "Nature as Object of Science: on the medieval contribution to a science of nature," Chuaru Koyama (ed.), *Nature in Medieval Thought*, Leiden, Brill, 2000, p. 131.

<sup>164</sup>Strozewski makes a survey of the understanding medieval philosophers had of metaphysics as a subject, and draws up a list of opinions on which they all agree: Metaphysics is a science, *scientia*; it is the highest and noblest science, and it is therefore also to be considered wisdom. It belongs to the category of *Habitus* – an intellectual disposition. It is synonymous, with some limitations, to *theologia*, *theosophia*, *scientia divina* and *philosophia prima*. Metaphysics has its own proper subject different from other sciences, and it has a different methodology from *scientia* or scientific methodology. It is characterized by the idea of unity or one, and because of its complexity should be taught after all the sciences have been understood. In summation, although Metaphysics belongs to a system of sciences, it is in spite of its specificity inextricable from them. Wladislaw Strozewski, "Metaphysics as a Science", Monika Asztalos, John E. Murdoch and Ilkka Niiluoto (eds.), *Knowledge and the Science of Medieval Philosophy*, Helsinki, International Congress of Medieval Philosophy, 1987, Vol. I, p. 129-157.

<sup>165</sup>Ludger Honnefelder, "The Concept of Nature in Medieval Metaphysics", Chuaru Koyama (ed.), *op. cit.* p. 75-76.

<sup>166</sup>Grace is considered the ultimate state of Being.

<sup>167</sup>Logic: a syllogism – sequentially deduced argumentation, deduction. Aristotle developed a method of demonstration as part of a logical theory using natural language to describe and therefore ultimately understand reality. For ethics, Aristotle developed a theory of virtues, examining the characteristics of desires, goals, imagination, emotions, intuitions, choices, and intentional actions. Theoretical activity and wisdom go hand in hand and psychological states require a grasp of truth. What is expected to be achieved by all this is a teleological explanation for the study of nature and what is good, which is how the notion of species – the good or characteristic of each thing – arises. Aristotle argued against the singularity of Plato's universals, arguing that they cannot exist by themselves but only as particular things. Ted Honderich (ed.), *The Oxford Companion to Philosophy*, Oxford, Oxford University Press, 1995, p. 50-57.

<sup>168</sup>*Ibid.* p. 613. The main points of Neoplatonism are the belief in non-material reality as the highest form of reality, a belief that there must be a higher reality than visible and sensible things, preference for intellectual intuition over empirical forms of knowing, belief in some form of immortality, and a belief that the universe is essentially good.

<sup>169</sup>Ernest A. Moody, *Studies in Medieval Philosophy, Science, and Logic*, Berkeley, University of California Press, 1975, p. 412-413.

<sup>170</sup>*Ibid.* p. 412-413. "... the counterpart of this epistemological empiricism was the nomenclistic analysis of the semantical structures and ontological commitment of cognitive language that Ockham developed in his logical writings." It is important to mention here that while Ockham is thought of as a nominalist, he is not proposing a doctrine that rejects the ontological ideology that gives both meaning and truth to existence, but proposes, rather, an extreme commitment to the economy by which philosophy should relate to ontology.

<sup>171</sup>Roger French and Andrew Cunningham, *Before Science: invention of the friars' natural philosophy*, Brookfield, Scolard Press, 1996, p. 71.

<sup>172</sup>The Islamic empire in the seventh century was in a state of expansion from India in the east to North Africa and Spain in the west. Along the way they confronted a number of different theologies, namely Judaism, Zoroastrianism, Greek and Hellenistic traditions and learning, and Christianity. The process of digesting, questioning and assimilating promoted a lot of the activity from which the Middle Ages in the main benefited, adopting the passion for theology, philosophy and argumentation. In the ninth and tenth centuries, classical works from the Hellenistic schools were translated: *Timaeus*, *The Republic*, *Phaedo* and *Crito* and *Laws* by Plato, and all of the works of Aristotle with the exception of *Dialogues* and *Politics*. Nevertheless the works of Plato and Aristotle were frequently referred to as one body of work. Among a group of dialectical philosophers called Mutakallimun, discussions determining Man's freedom was a central concern, and though they did not develop a philosophical system, they used it as a tool for argumentations around the unity of God – how could God be One yet have many attributes – and concerning divine justice. Their discussions also included an attempt to rationalize God's omnipotence with human free will, and a search for proof of the Creation of the world. Arthur Hyman and James J. Walsh (eds.), *Philosophy in the Middle Ages*, Indianapolis, Hackett, 1983, p. 205.

<sup>173</sup>Roger French and Andrew Cunningham, *op. cit.* p. 81.

<sup>174</sup>Alfarabi, *Philosophy of Plato and Aristotle*, Muhsin Madi (trans.), Ithica, Cornell University Press, 1969, p. 32.

<sup>175</sup>Bernard of Chartres established that secular studies had a place alongside secular learning; naming it *Our Egyptian Gold*, he had the idea of nature as the ability of creatures to reproduce their own kind, and in Graian's *Derectum*, to explain natural law. Roger French and Andrew Cunningham, *op. cit.* p. 93.

<sup>176</sup>*Ibid.* p. 83.

<sup>177</sup>According to Alfarabi, theoretical virtues begin with primary knowledge that is given. On this basis one can proceed to investigate by inference and study those things that one does not know from the outset – and they are understood as problems that can lead to conviction or opinion, or knowledge, understood as conclusions. The rest is acquired by meditation. At times we achieve certainty, at other times we depend on belief and persuasion about the rest. Alfarabi, *op. cit.* p. xi-xxiv, p. 1, p. 14-35.

The methodology for achieving knowledge through investigation is to compare the method of formal causes that lead to the truth – causes by which, from which, and for which a genus exists. Demonstration involves asking why the thing is, or *whether* the thing is. An investigation into the 'what' and the 'how' of *why* man is made from what, or *for* what, is not complete until all of these have become intelligible and distinguishable from each other. This is also how a citizen may attain their own happiness.

<sup>178</sup>Daniel of Morely represented Aristotle as having two ultimate causes: 1) the principle of original causes; and 2) on the question of Creation, there being two principles, unity and diversity. See Roger French and Andrew Cunningham, *op. cit.* p. 83.

<sup>179</sup>In French and Cunningham it has been argued that Daniel of Morley did not himself read Aristotle, but rather is suspected of quoting Avicenna who interpreted the upper world as being of causes and the lower world as being of complexes; their relationship is the subject of his second tract *Astronomia*.

<sup>180</sup>In these two divisions, the power of God was lodged in the upper or celestial regions, understood as the spiritual formal cause in charge of generation, procreation, corruption, growth and age, health and disease and other changes in the lower world; the final cause being twofold – the corporeal being, and the spiritual being, body and soul. See Roger French and Andrew Cunningham, *op. cit.* p. 86.



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<sup>181</sup>It is important to include Gundisalvi because he was an important reference to influential scholastics such as Albertus Magnus – teacher of Aquinas, Aquinas, Bonaventure and Duns Scotus. See Arthur Hyman and James J. Walsh (eds.), *op. cit.* p. 358-359.

<sup>182</sup>*Ibid.* p. 13. Also there were no major changes to this curriculum until the late twelfth century with the introduction of Aristotle's *Physics* and *Metaphysics*.

<sup>183</sup>Roger French and Andrew Cunningham, *op. cit.* p. 85-87.

<sup>184</sup>Roger Bacon, *Opus Majus*, Robert Burke (trans.), New York, Russell & Russell, 1962, Volume I, p. 41.

<sup>185</sup>According to Moody, Buridan's dynamic analysis of gravitational motion, even if it is less sophisticated than Newton, nevertheless considers force of air as a resistance and therefore a change on a fallen body. It was in Paris in the first part of the fourteenth century that the concepts of instantaneous velocity and uniform acceleration were empirically interpreted. Ernest A. Moody, *op. cit.* p. 198-201.

<sup>186</sup>Neckman's writings reveal that his contemporaries did read Aristotle, and he describes the circumstances in which clandestine lectures were held behind closed doors. See Roger French and Andrew Cunningham, *op. cit.* p. 91. While Aquinas believed that everything was created from nothing by God, this stood in opposition to Greek philosophy which believed that nature was autonomous. This opposition represented the conflict between the two philosophical positions, and the challenge lay in accommodating this contradiction. Neckman's solution was to ignore it through an individual treatment of the natures of things.

<sup>187</sup>*Ibid.* p. 84-91.

<sup>188</sup>*Ibid.* p. 91.

<sup>189</sup>Kluxen writes that non-contingent cognition of facts, nature, reason, and freedom underlie our definition of ethics. What is at stake in medieval ethics is the good, a good that should be done and a good that can be done by human beings. Natural law deals with those goals that are proven to be good that pre-exist in human nature. Wolfgang Kluxen, "The Thomistic Solution to the Question of Ethics", Chuaru Koyama (ed.), *op. cit.* p. 101-103.

<sup>190</sup>"Essential principles are matter and form, and whatever belongs to a thing by reason of its essential principle must have absolute necessity in all cases." See Richard N. Bosley and Martin M. Tweedale, *Basic Issues in Medieval Philosophy*, Peterborough, Ontario, Broadview Press, 1999, p. 41.

<sup>191</sup>According to Honnefelder, in Aristotle, for example in his *Physics* and *Metaphysics*, objects are stretched beyond the real constitution of the objects through matter and form. In Plato, in his *Timaeus*, the object could only be thought of as a world formation. For Aquinas, however, what characterized an object of our experience, without exception, is its own internal constitution through the indeterminate act of being. Ludger Honnefelder, *op. cit.* Chuaru Koyama (ed.), *op. cit.* p. 77.

<sup>192</sup>*Ibid.* p. 76-77. This idea of 'accidental' in Aristotelian logic was based on the idea that rain falling in the winter was a constant occurrence, whereas in summer it was more an element of a chance event of physics. Aquinas' summary of the importance of change also brings with it the idea of the necessity of unremitting progress in light of the desired perfection. See also J. Marenbon, "Autonomy of Philosophy as a Discipline", Monika Asztalos, John E. Murdoch and Ilkka Niiniluoto (eds.), *op. cit.* p. 270. St Thomas writes about Man's true end: "*The perfection of a rational creature consists not only in what is fitting for him by his nature, but also in what is attributed by a supernatural participation in God's goodness... the final happiness of man consists in a kind of supernatural vision of God. But man cannot attain this vision but save in the manner of a pupil learning from God, his teacher...*"

<sup>193</sup>Ludger Honnefelder, *op. cit.* Chuaru Koyama (ed.), *op. cit.* p. 81.

<sup>194</sup>Arthur Hyman and James J. Walsh (eds.), *op. cit.* p. 455-456.

<sup>195</sup>Bonaventure believes that in attaining a state of Grace nature can do little for man on earth; to reach a state of Grace, the soul detaches itself from the body – an implosion from the Holy Ghost – and in being carried upward in its flight, the soul passes through successive layers of the exterior world and the highest powers that the sense that can conceive of, until the shock of Grace releases it from human ideas so it can float to freedom. The soul in that act enters into darkness, but an illuminated darkness, and this is for Bonaventure the ontological beginning. Etienne Gilson, *The Philosophy of St. Bonaventure*, Domilltyd Trethowan (trans.), London, Sheed & Ward, 1983, p. 431-469.

<sup>196</sup>Roger Bacon echoes Bonaventure when he writes that there is only one perfect wisdom – that of the scriptures. The truth of Jesus Christ is wisdom, and philosophy therefore is not foreign to God's wisdom, but a part of it. The Creator can be known through the knowledge of his creation. See Roger French and Andrew Cunningham, *op. cit.* p. 241.

<sup>197</sup>"For it is my wish, withholding nothing, to render an account before a judge of all those things which I have done, written or said, since I took the rule of St. Francis". It is not that Ockham resists the authority of the Church, but is anxious that there is accountability. This was exactly the position St. Francis himself took in relationship to church authority. And it is also this very questioning that separates the feudal system from the enlightened humanism that tried to take hold in the late medieval period. William of Ockham, *On the Power of Emperors and Popes*, Annabel S. Brett (trans.), Bristol, Thoemmes Press, 1998, p. 68.

<sup>198</sup>"*The medieval view includes and surrounds and expands on a positivistic-materialistic-empiricistic-scientific-secular-world view In causing our existence as rational efficient causes who obtain knowledge of which we are not the mere measure God is the First Cause renders intelligible objective scientific knowledge. This reduces reality to natural phenomena.*" This is what William Ockham was trying to side-step. See Robert Trundle, *Medieval Modal Logic & Science*, Lanham, University Press of America, 1999, p. 130. See also Richard N. Bosley and Martin M. Tweedale, *op. cit.* p. 78. Ockham does not agree with the introduction of secondary causes simply because it would be an infinite mirroring back and forth and allow for many imperfections.

<sup>199</sup>Moody explains Ockham's doctrine of concrete and abstract terms, and absolute nature of connotative terms, as an attempt to formulate a semantics of meaning and define the referent consistent with his syntactical theory of potentialities. Ernest A. Moody, *op. cit.* p. 386.

<sup>200</sup>Epistemology is used here as the philosophical theological knowledge, or critical knowledge of theology through philosophical questions.

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<sup>201</sup>Wladyslaw Strozewski, *op. cit.* Asztalos and collaborators (eds.), *op. cit.* p. 151. It is interesting to see the contrast between Robert Grosseteste and William of Ockham on the question of cognition. Grosseteste believed there was an immaterial prime substance that guaranteed the certainty of our cognition. This prime substance, however, is not accessible to our intellect in the present condition and we have to be content with certainty connected to mathematical subjects.

<sup>202</sup>According to Moody, Ockham stated that knowledge (in the sense of *scire*) is only of propositions of objects known; *propositio* in medieval usage is applied to that which is written, spoken, or formed in the mind. This word *propositio* in medieval usage was used in the way the word 'sentence' is used now. Ernest A. Moody, *op. cit.* p. 322.

<sup>203</sup>The significance of Ockham's move from the particular to the general is significant because it differed significantly from a nominalist perspective which would have been unable to conceptualize that thinking a form in one's mind is possible, and therefore could not assume connections between forms simply by realizing them in one's mind. A nominalist therefore assumed nature could only answer particular questions, and not general ones. Jaakko Hintikka, "Concepts of Scientific Methods from Aristotle to Newton", Monika Asztalos and collaborators (eds.), *op. cit.* p. 72-81.

<sup>204</sup>Aristotle believed that knowledge is about the essential nature of things. The question the author posed, and Aristotle, Aquinas and Ockham answer differently, is "if the proper object of true knowledge is universal nature and everything real is particular, how is it possible to gain real knowledge about the things in their own right?" Aquinas does understand that the object of scientific proof is always the particular, but qualified and different from essential nature. Ockham, on the other hand, arrives at his conclusion from the ability to demonstrate the subject's real existence. Therefore the intuited and abstract cognitive experience as understood by him is of the actual or real existence and the potential existence. L.M. Rijk, "The Posterior Analytic in the Latin West", Monika Asztalos and collaborators (eds.), *op. cit.* p.104-126.

<sup>205</sup>The human intellect, Ockham concludes, can directly conceive individual things that exist independently in our thoughts. Objects of knowledge (in this sense) are propositions formed within the mind by operations we freely form in our mind, and with this line of reasoning he also breaks the chain of inevitable bondage between Man and God, inserting the idea that a man who does not believe anything, except that which he can conclude by his own reason, should also be worthy of eternal life and at the same time – while in the conventions of the Church Man has to achieve a state of Grace to be accepted by God – God has no obligation to confer eternal life on him. Ockham writes: "As Christ did not come into the world in order to take away from men their goods and rights, so Christ's vicar – who is inferior – has no authority or power to deprive others of their goods and rights." See Ernest A. Moody, *op. cit.* p. 413-421, 436-437.

<sup>206</sup>William of Ockham, *op.cit.* p. 79-80, 166-169.

<sup>207</sup>Retractions or wrongdoing is punished when it is done intentionally, and goodwill must be so great that it is preferable to all bodily good. It is, St. Augustine claims, within the power of our will that we enjoy or lack this great true good. See Arthur Hyman and James J. Walsh, *op. cit.* p. 65, St. Augustine, Book I, Chapter 9, 1.12.26.

<sup>208</sup>*Ibid.* p. 508.

<sup>209</sup>*Ibid.* p. 639-643.

<sup>210</sup>Duns Scotus states that beauty is not some absolute property, but a comprehensive state of proportions – shape, colour, size. Goodness of a moral act has as its adornment proportion, and all that relates to it. Idea is essence, which represents things perfectly. Creativity is the production from nothing, not a part of a resulting product. Art stands to production as prudence to action. See Wladyslaw Tartarkiewicz, *History of Aesthetics*, The Hague, Mouton, 1970, Vol. II: *Medieval Aesthetics*, p. 261-271.

<sup>211</sup>*Ibid.* p. 213, 290.

<sup>212</sup>*Ibid.* p. 245-261. This section is on Aquinas' reflections on beauty, and its definition both as physical and spiritual. He states that the good is the object of desire, while beauty is the object of cognitive power – and is a formal cause.

<sup>213</sup>Petrarch celebrates the lively pictures that manage to convey motion, even though the image is fixed. And he makes claims that the art of painting is esteemed beyond all handicrafts and closer to nature than sculpture. Petrarch is also quite definite about the necessity to not exaggerate the pleasure one receives from a work of art – as it should never exceed the pleasure we get from the presence of God. See Michael Baxandall, "Petrarch: painting as the model of art", Andrew Ladis (ed.), *Giotto as a Historical Figure*, p. 221-247.

<sup>214</sup>Petrarch's understanding of art is so grounded in classical references that his only desire is for the works to actually come to life – *statues that breathe* – and the statue *would be better than the living*, introducing the element of the sublime, like Dante. Art should be like nature: the work of the Divine Artist. While artists were interested in theory, theoreticians were not interested in what artists thought – it was too *a priori*. Petrarch reiterates the idea that earthly delights governed by discretion and moderation would stir men to heavenly love and put them in mind of their first original. Villanni's main source for ancient painting was Pliny's Natural History, and Pliny's account was invested in the relationship between Apollodorus and Zeuxis. This became Villanni's model of how Cimabue stood to Giotto – in that Apollodorus was the first to give figures their appearance of reality, while Cimabue was the first to suggest a resemblance to nature. See Ernest H. Wilkins, *Studies on Petrarch and Boccaccio*, Padua, Editrice Antenore, 1978, p. 197-200; see also Michael Baxandall, "Petrarch: painting as the model of art", Andrew Ladis (ed.), *Giotto as a Historical Figure*, p. 221-247.

<sup>215</sup>Thomas Aquinas was first introduced in the lectures of Albertus Magnus to the ideas of Pseudo-Dionysius on the relationship between wisdom and beauty, which proposed that all beings are preserved by what is incorruptible of their own nature, and they are filled with every divine harmony and sacred good. See also Wladyslaw Tartarkiewicz, *History of Aesthetics*, Vol II, *Medieval Aesthetics*, p. 245-261. Thomas Aquinas' aesthetics state that the good is an object of desire, whereas beauty is the object of cognitive power – and beauty is proper proportion. The senses delight in proper proportion, and since cognitive powers are a kind of reason that proceeds by assimilating form, beauty is a formal cause: beauty is to sight as goodness is to taste. Physical beauty is proper ordering of spiritual goods, and spiritual beauty an abundance of it. A thing is not beautiful because we love it, but we love it because it is beautiful and good. Only Man delights in beauty; Man, unlike animals, takes pleasure not only in food, but in music – in harmony. It is not the artist that need be perfect, but the thing that is made – that is good art. See Umberto Eco, *The Aesthetics of Thomas Aquinas*, Cambridge, Harvard University Text, 1988, p. 26.

<sup>216</sup>Umberto Eco, *Art and Beauty in the Middle Ages*, Hugh Bredin (trans.), New Haven, Yale University Press, 1986, p. 44-45. In the Middle Ages the celebration of simple brilliant colour cohabits, as in Giotto's work, with the brilliance of light. See also Tartarkiewicz, *History of Aesthetics*, Vol. II, *Medieval Aesthetics*, p. 229-232. (section on Grosseteste)

<sup>217</sup>Wladyslaw Tartarkiewicz, *op. cit.* Vol. II, *Medieval Aesthetics*, p. 232-245. (section on Bonaventure). The purpose of art is to give aesthetic satisfaction. The world is beautiful, the church adorned is more beautiful, and celestial Jerusalem the most beautiful. There are two kinds of beauty in nature: spiritual and physical. Physical beauty, which is vanity, decays – but spiritual internal beauty does not.

<sup>218</sup>It should be remembered that eternal light was also part of the spectrum of darkness, so it was always present.

<sup>219</sup>Wladyslaw Tartarkiewicz, *op. cit.* p. 232-245. (section on Bonaventure). All pleasure is dependent on proportion; shapeliness for beauty is nothing but numerical equality, a certain arrangement combined with pleasantness of colour.

<sup>220</sup>*Ibid.* p. 271-279. For Ockham, beauty is a proper proportion of members in conjunction with a healthy body. Form is a definite ordering of parts. There are some works that are not only the work of the artist, but of nature – like medicine. Art is here thought of as a skill, and thus everything which does not act freely is art. The image formed by the artist is not an image by nature, but by intention – like the image but in a different substance.

<sup>221</sup>Bernard of Clairvaux (1090-1153) proposed that the goodness at the root of true being is beauty, and beauty is the objective of art. He developed an ontological approach to the mysteries of the nature of the human psyche, and connected it to the nature of Being itself; he appreciates the beauty of Jesus Christ for the benefit of his fellow men: his voice was sweet and his face was comely ... echoes of St. Francis. See M. Kilian Hufgard, *Bernard of Clairvaux's Impact on Medieval Culture*, Lewiston, The Edwin Mellon Press, 2001, p. 4-13.

<sup>222</sup>Rosario Assunto, *Die Theorie Des Schoenen im Mittelalter*, Cologne, Dumont, 1996, p. 117.

<sup>223</sup>Ecco writes that on the beautiful: pleasing proportions can be achieved by correspondence of one part with another. For Vitruvius, proportion wasn't so much a question of numbers, as much as it was a question of organic harmony. In the Middle Ages, however, proportion was frequently determined by mathematical and geometrical quantification. Especially appealing was its relationship to the cosmological spectacle of the spheres, their magnitude, beauty and permanence – according to Vincent de Beauvais. In the later medieval period, proportion was considered an aspect of beauty, and therefore proportion participated in the transcendental. Umberto Eco, *Art and Beauty in the Middle Ages*, p. 29-42.

<sup>224</sup>Wladyslaw Tartarkiewicz, *op. cit.* p. 232-245. (section on Bonaventure) The mind is saddened by extremes. Proportionality occurs when it maintains a relationship between action and result: a man's act meets the need of a recipient. There is no beauty except that which lies in the harmony of perceived with perceiver – and harmony serves to delight spiritual sight. Beauty arouses the soul to love. The soul creates new compositions; the man who sees an image of Peter also sees Peter. The Soul assimilates its object of attention.

<sup>225</sup>*Ibid.* p. 229-232. Grosseteste also believed that art always imitates nature, and acts in the best possible way because nature is faultless. Harmony of proportion and its unity is beauty. The artist has in his soul the image of a work – it is the form, just as the clay casting mold is the form for the figure. God is the most perfect perfection, the fullest, the shapeliest, the most beautiful – He is the cause of all beauty.

<sup>226</sup>Please see the section on Optics in reference to the panel painting of *St. Francis Receiving Stigmata* (now in the Louvre) done some twenty years prior to this.

<sup>227</sup>Nature, reason and freedom underlie our definition of ethics. What is at stake in medieval ethics is the good – a good that should be done and a good that can be done by human beings; natural law deals with those goals that are proven to be good that are pre-existing in human nature. See Wolfgang Kluxen, *op. cit.* Chuaru Koyama (ed.), *op. cit.* p. 101-103.

<sup>228</sup> According to Riess, Giotto worked closely with the astrologer Pietro d'Abano to design for Perugia an astrological work – a ceiling-map that is considered the most important in the early part of the fourteenth century. It included the representation of the seven planets with illustrations of their properties. While Villani, who recorded this event, while being up to a point enthusiastic about planets and their effect, believed that Man's actions are primarily rational, and consequently the Past is comprehensible. John B. Riess, *Political Ideals in Medieval Italian Art*, Ann Arbor, Michigan, UMI Research Press, 1981, p. 74-75.

<sup>229</sup> Arthur Hyman and James J. Walsh (eds.), *op. cit.* p. 203-209. The early Islamic theologians borrowed heavily from neo-platonism and believed in the material emanation from the one, singular unity or God, and creation was identified with the neo-platonic notion of emanation. They believed that the prophets were the transmitters of divine knowledge and communicated God's will. The prophets were not arbitrarily selected, but God considered them to possess human perfection (see Alfarabi p. 213). They also believed in the idea that while God was omnipotent, His justice lay in the freedom of human will – and God would only pass judgment on those acts of Man that could be made under the conditions of free will. Alfarabi also argued that the human intellect was an immortal entity, and that knowledge of being for Man was primary, while sensory experience was secondary (see Avicenna, p. 235). There was also a high regard for mathematics, and Algazali (1058-1111) proposed to apply Aristotelian logic to Islamic theological issues. He struggled with many of the logical contradictions with Islamic fundamental beliefs that occurred in the process. Averroes (see p. 294) argued that God thinks the things in the world as particulars, while His knowledge is completely different from Man. Averroes then also proposed that physics establishes the existence of subject matter for metaphysics. He even outlined how only physical proofs could establish the existence of the prime movers, and that these Middle Ages plays itself out. See Geoffrey Parrinder (ed.), *World Religions*, New York, Facts on File Publication, 1984, section on Islam, p. 462-513: Mohammed (570-580) is the first prophet, and the word Islam means in Arabic 'acceptance', 'submission', 'surrender' or 'commitment'. Muslims believe that there was never a time when the people did not have a prophet through which God spoke to them in their own language, and God communicated to them in an act of revelation, of which the Koran was its collected writings.

<sup>230</sup> Anselm (1033-1109) was dedicated to educating the monks, and in his early years at Monastery Bec in Normandy he taught and lectured on matters that were collected as a book – *The Monologion* – the divine essence describing how to define the best, the greatest, and the highest. The second book, the *Proslogion*, concerns the nature of God and what might it mean when we use the word God. *Grammatico* dealt with logic, concentrating on the question, for example, is white an adjective or an accident, and such questions as truth and free will and on the fall of the devil. In *Why God became Man*, there was described the necessity for fallen man to do something for his creator. Man, living in sin, was responsible for redeeming himself, and it became necessary for God to become human in order to demonstrate to humans how redemption was possible. Anselm articulated his true position in *On the Incarnation of the World*. Anselm also speculated *On the Virgin Conception and Original Sin*, and finally on the procession of the Holy Spirit asking whether the Holy Spirit proceeds from God the father alone, or from God and the son. See Anselm of Canterbury (1033-1109), *The Major Works*, Oxford, Oxford University Press, p. vii-xi.

<sup>231</sup> *Ibid.* p. 192.

<sup>232</sup> John Brown, Reverend, *Self-Interpreting Bible, Old and New Testament*, p. 1-3 Genesis, Chapter I, 4. "God saw the light...and said that it was good;... 10, God called dry land earth and said that it was good;... 12 The earth brought forth grass... and God saw that it was good;... 18 God divided light from darkness...and saw that it was good"; Genesis Chapter II, 9. "And the tree of knowledge of good and evil". See also Roger French and Andrew Cunningham, *op. cit.* p. 130-132. On the Evil versus the Good World: there is a rivalry about the creation of nature as both good and evil. The Heavenly world as good, the material world – the here and now – as evil.

See also Donald Logan, *A History of the Church in the Middle Ages*, London, Routledge, 2002, p. 203-213. Logan writes that during the emergence of dissent and the rise of the friars, a group known as the Cathars formed in the twelfth century outside the Church's jurisdiction. Their structure was a simple triad – the Perfect, the Believers and the Sympathizers. The Perfect lived simply and abstained from sex, had no Mass but shared bread and through purification released themselves from Satan. Satan was created by God and he was responsible for material things. – the world was evil through its material character and hence through the senses – for example sight and touch. They believed in two eternal powers – good and evil. A world-denying life-world of spirit, non-materiality, a world of Good or God; as long as the spirit was part of the body, Satan was in charge, and Life was about liberating the Soul from Satan-as-body.

<sup>233</sup>Anselm's argumentation on the will and omnipotence of God is linked to God's having the freedom to ordain any kind of order he wishes, both physically and morally. Therefore, it is not possible to argue from the nature of the revealed order to the nature of God, but rather from the nature of revealed order to the inscrutable but presumably benevolent will of God, or visa versa. Anselm also argued that one can never know for certain the reason for God's choices; one affirms that they are reasonable and good, because they are experienced as such, and because one respects the divine choices and has trust in God. See William J. Courtenay, *Covenant and Causality in Medieval Thought*, London, Variorum Reprints, 1984, p. 39-64: *The Necessity of Freedom in Anselm's Conception of God*.

<sup>234</sup>Anselm of Canterbury, *op. cit.* p. xviii.

<sup>235</sup>In the 12<sup>th</sup> century the attitude towards Nature becomes less fearful and intimidated as nature is seen as no longer beyond human understanding. Nature was now becoming associated with the model of change and human emotive states. A more positive and productive, and joyful, relationship that developed – in which Nature was a master and teacher on its way to becoming the servant of man's needs. This also contributed to the *Man as Measure* model. See William J. Courtenay, *op. cit.* p. 111-113.

<sup>236</sup>Bernard of Clairvaux, Peter Damian, and Anselm all agree on this point. Bernard, anxious not to limit God's freedom, adds that it also extends beyond the ordained order. God may save individuals according to his judgments, but while God can increase his freedom through acts of mercy, it is impossible for God to increase his freedom by rejecting those who turn to him: God is obliged towards the good. See William J. Courtenay, *op. cit.* p. 111-122.

<sup>237</sup>Two distinct views run parallel in the Middle Ages. Scholasticism attempted to create a holistic view of God, Nature, and Man through Logic, Nominalists, on the other hand, believed that Logic defined universals as concept created by the mind without real, or extra-mental referents. and for this reason without meaning as a description of external reality. In attacking their metaphysics, ethics and scientific methodology, the Nominalists ultimately undermined the major achievements of the Scholastics. See William J. Courtenay, *op. cit.* p. 27-59.

<sup>238</sup>Tarnis writes that Ockham was essentially denying the real existence of anything other than singulars, of which he suggested universals were really just a confused and indistinct generalization. Richard Tarnas, *op. cit.* p. 200-208. See also Gordon Leff, *The Dissolution of the Medieval Outlook*, New York, Harper Torch Books, 1976, p. 34.

<sup>239</sup>William J. Courtenay, *op. cit.* p. 367-380.

<sup>240</sup>Tuchman writes that in some monasteries, the monks of the Franciscan Order had pocket money, their ration of ale, wore jewelry, dined with and worked for the wealthy, had elaborate dress and wore fancy boots. This is not to say that there were not those that walked barefoot and followed more closely in the footsteps of St. Francis. Barbara W. Tuchman, *A Distant Mirror: the calamitous 14<sup>th</sup> century*, New York, Ballantine Books, 1979, p. 31.

<sup>241</sup>With the Crusades, Europe was opened up to greater prosperity, which inevitably included the institution of the Church. Moreover, at this time, the establishment of private schools started to separate education from the Church, whose increasing sophistication – both material and intellectual – caused a reaction in those for whom Christian simplicity was an imperative. See Donald Logan, *op. cit.* p. 131-135.

<sup>242</sup>*Ibid.* p. 202-205.

<sup>243</sup>John Brown, Reverend, *The Self-Interpreting Bible, Old and New Testament*, p. 1035. Luke: Chapter 9, stanza 3.

<sup>244</sup>In Germany they were the Cathars, in Flanders the Piphles, in France the Waldesians and Texerant, and later in Italy the Friars took on this role with the exception that they were given permission by the Church – see St. Francis and *the Confirmation of the Rule*. See Donald F. Logan, *op. cit.* p. 203.

<sup>245</sup>According to Elliott, while the Judeo-Christian prototype still echoed ancient taboos, it differentiated between the male, or temporary impurity, and the female condition of sexual impurity, the seed as its root cause, the woman's menstrual blood having extraordinary power – even by touch – to contaminate. Christ, on the other hand, attributed purity to the state of the individual's inner state. Christ stated that nothing that comes into a person can contaminate them, but rather it is out of a man's heart – the chamber otherwise thought of as the place of purification – that evil thoughts, fornication and lust, can be generated. However, for the Church, the problem posed by the Virgin birth was with a woman's impurity. The Church had had to separate the impurity of the blood of the after-birth by creating the immaculate conception of Mary. Thomas Aquinas suggested that while hot lust draws blood during ordinary intercourse down to the women's genitals for the purpose of conception, Christ was never contaminated by this region and that the Holy Spirit furnished pure blood to the Virgin's womb. The early Christian Priests had wives, and for this purpose ritual purification for the priests was conceived. Dyan Elliott, *Fallen Bodies: pollution, sexuality, and demonology in the Middle Ages*, Philadelphia, University of Philadelphia Press, 1999, p. 2-13.

<sup>246</sup>*Ibid.* p. 37. On the question of Female Libido and Mechanism of Conception: Vincent de Beauvais (d.1264), in the *The Mirror Of Nature*, written between 1247 and 1259, provides an account of the various authorities that were both available and considered at this time in relationship to female sexuality. He cites from the study of science, theology, and philosophy the consistent belief that women had a heightened libidinousness. Not only are women considered more lustful than men, but more lustful than all female animals. Female pleasure was equated with the ejaculation of the male seed, rationalizing – in the case of rape – that even if the initial act was displeasing, the frailty of the female flesh ultimately overcame rational will by natural will, at which point the woman in the act of ejecting her seed was in as great a state of pleasure as the male, and therefore became pregnant.

<sup>247</sup>*Ibid.* p. 40. On the question of Imagination, Sensuality, and Spirituality: In the section on medical-empirical beliefs, I outline the five-cell brain theory, and note that the area known as *imaginativa* is located right next to the cell of reason. Imagination was therefore dependent on the senses for material reality. These senses, arriving originally from the fiery power of the heart, were purified in the brain and then become what occupies the five cells or zones of sensitivity in brain. These zones, apprehending first the outside world, become withdrawn to the fantasy chamber – and further back still – to become or create the imagination.

<sup>248</sup>*Ibid.* p. 41. Women that demonstrated sensuality were therefore considered without the faculty of reason and intellect, and considered to be particularly imaginative.



<sup>249</sup>*Ibid.* p. 40. "Thus the imagination is a likeness of the body, conceived by contact with bodies through the senses of the body and led inwards through the same senses to the purer part of the corporeal spirit and impressed on it. Namely on the peak of the corporeal and touches the rational." Thomas of Cantimpré, *liber de natura rerum*, 2.15, 1:95-96. Much of this is also taken from Aristotle's *De somno et vigilia*.

<sup>250</sup>The inquisitors systematically questioned the population, asking whether the individual had heard sermons, helped to feed or clothe and shelter, or even *seen* a heretic. It was a way of tyrannizing the population, threatening them with hell and condemnation. See Donald F. Logan, *op. cit.* p. 210.

<sup>251</sup>*Ibid.* p. 210. Waldés believed that as Christ sent out the Apostles to preach to the people, without having to be authorized by the Church, so he would preach to the people without a license.

<sup>252</sup>It is also interesting to note that this act of imitating the Apostles bore resemblance to a Muslim tradition, which imitated the conduct of their Prophets.

<sup>253</sup>*Ibid.* p. 203-223.

<sup>254</sup>The Franciscans' four principle virtues were humility, poverty, charity and compassion.

<sup>255</sup>Lawrence Cunningham, *Saint Francis of Assisi*, San Francisco, Harper and Row, 1981, p. 12-14.

<sup>256</sup>Guy Halsall, *Violence and Society in the Early Medieval West*, Woodbridge, Suffolk, Boydell Press, 1998, p. 6, 82-87.

<sup>257</sup>*Ibid.* p. 6, 82-84.

<sup>258</sup>*Ibid.* p. 6, 82-87. After the murder of John Paul VIII, the Roman council passed in 769 the exclusion of secular involvement in papal elections.

<sup>259</sup>Donald F. Logan, *op. cit.* p. 257.

<sup>260</sup>*Ibid.* p. 257.

<sup>261</sup>Barbara Tuchman, *op. cit.* p. xix. As I already indicated, Tuchman also suggests more than the idea of enlightenment was at the root of the ferocity with which religion, its institution, and the public's yearning desire for redemption are unique to this period. She puts it down to a number of factors: chivalry practiced by the warrior aristocratic class was based on the round table – the perfect form. As Tuchman rightly points out, while venturing forth to slay the heretics – their role originally intended to be in defense of the faith, to uphold justice and assist the oppressed – they themselves become the oppressors whose lawlessness was part of the problem.

<sup>262</sup>*Ibid.* p. 31-37.

<sup>263</sup>Mary's lamentation at the foot of the Cross. See Donald F. Logan, *op. cit.* p. 285.

<sup>264</sup>God is not bound – God has bound himself and thereby institutes a contingent world freely chosen and created by God, unlike the Greek belief in a world of necessary things and relationships. Ockham does not speak of the paradox inherent in acting both omnipotently and without absolute potential, a contradiction. It is in this context that he says God only acts in a (self)-ordained manner. See William J. Courtenay, *op. cit.* p. 1-37.

<sup>265</sup>Roger French and Andrew Cunningham, *op. cit.* p. 134-137. Note that the argument about free will also extended to the angels. God, as the cause of causes, must have known what the fallen angels would do, and therefore they were without free will. The Cathars argued that therefore, without free will, none of the angels could have sinned. The argument was won by including the legitimacy of natural reason, common to all men. This was also part of what underpinned the division or split in the fourteenth century between reason and revelation. See Etienne Gilson, *Reason and Revelation in the Middle Ages*, New York, Scribners, 1938, p. 86-91. Nothing could be proven about God based on natural reason, not even his existence. Revealed truths could not be justified by natural reason, but natural reason could explain many of the more pragmatic matters of a Christian.

<sup>266</sup>Pierre Duhem, *Medieval Cosmology: theories of infinity, place, time, void, and the plurality of the worlds*, Roger Ariew (trans.), Chicago, University of Chicago Press, 1985, p. 4-5. As I have already mentioned in the section on mathematical beliefs, in the Middle Ages there exists a complex conception of this idea of infinite, infinite divisibility, or multiplication.

<sup>267</sup>*Ibid.* p. 18-22. Paraphrased by Duhem from Ockham, *De Sacramento Altaris*, p. 31-32. "They argue that formally, everything divisible is through its proper nature finite and terminated; that if it is continuous, it is so through its proper nature, without any other thing added to it; that from the point of view of causality, it is finite, terminated and continuous through God's agency and the other causes maintaining it, whatever those causes are. A line therefore is finite, terminated and continuous without anything else being added to it. If God, destroying all the other things, conserved this line, it would still be truly finite, terminated and continuous. And this indivisible thing is not admitted for any other reason [than to assure finitude, termination, and continuity to the line]. It therefore seems impossible, as well as superfluous, to admit that the point is such an indivisible thing."

<sup>268</sup>Pierre Duhem, *op. cit.* p. 22, 28: the part can be infinitely subtracted or added – in other words each instance can be whole and perfect, both finite in part and infinite in wholeness. Ockham sets up an opposition between the real and abstract, the whole to the part, the human mind with its conceptions of the particulars – dimensionless parts and their identification as point, line, planes, as abstracts against the volumetric sphere as the real body – a mind and body opposition, mind as abstract God's perfection, creation of the sphere/world body as real. The perfect un-partitioned sphere touching a plane is a contradiction – is the contradiction of the whole touching a part – because if it touches it must be touching, he says, by a divisible portion... "it cannot touch at an indivisible point [by hypothesis]. And, whichever way this portion is given, it will be spherical, since it is part of a spherical body...one might say that the spherical body touches the plane by one of its divisible parts..." According to Gregorius de Arimino... "In external reality, there is no area without depth; however, experience shows us that we can imagine and consider in ourselves an area without considering any depth, that is, consider a certain magnitude extended only in two dimensions; we can similarly consider a pure length stripped of any width. Moreover, we can consider a shape endowed with depth, that is, a magnitude extending in three dimensions, following three differences in location. The fictive magnitude of this kind we name surfaces, lines and bodies. ...The geometer does not assume that there is, outside the mind, real indivisibles of this kind; he allows only that they are imagined by the mind, and he defines them in the manner above...Let us hold as certain that no geometric truth requires the existence of points or indivisibles outside the mind..."

<sup>269</sup>*Ibid.* p. 27-29. Gregorius de Arimino (Gregory of Rimini) wondered how it is possible to safeguard geometry while denying the actual existence of points and lines. William of Ockham's theory of indivisibles was defended by John Buridan. Buridan considered that points, lines, and surface, the various indivisibles, are for geometers what eccentrics and epicycles are for astronomers: they are pure fictions that have no reality beyond the mind. But by reasoning concerning these fictions one achieves results in conformity with the measurements carried out on real bodies.

<sup>270</sup>Angelo Tartuferi, *Giotto: guide to the exhibition/Florentine itinerary*, Florence, Giunti, 2000, p. 100-104.

<sup>271</sup>Richard Tarnas, *op. cit.* p. 179-190.

<sup>272</sup>If one could say that the intersection of two separate views or, as previously mentioned, the point on the surface that is constructed by that behind or in front of the mirror, this intersection again marks a very particular place associated with the understanding of weight to magnetic attraction. Buridan was aware of this phenomenon. It was considered that the centre of the world was a point, some even imagined it to be a moving point. This point was understood as the universal place of heavy bodies, to which other bodies were attracted. Because Ockham disproved the idea of multiple worlds, this point then would draw other realities to it, making the centre inside the world the centre of the Universe. Pierre Duhem, *op. cit.* p. 470-476.

<sup>273</sup>St. Augustine evolved a concept of inwardness by first applying the character of the Neoplatonic framework to his evaluation of the soul. The soul is not divine or immutable, and he developed the doctrine of the Fall of the soul. He departs from Plotinus' inner divinity, and in his final analysis defines the soul as a private inner space that differentiates the creator from the creature. Each individual soul occupies its own space different from the intelligible world. See Phillip Cary, *Augustine's Invention of the Inner Self*, Oxford, Oxford University Press, 2000, p. 9.

See also G.R. Evans, *Philosophy and Theology in the Middle Ages*, London, Routledge, 1993, p. 90-95. Evans writes that in the Middle Ages there were discussions as to the nature of the soul – was it generated by the body or created? Commonly it was believed that it was created, and therefore this private space becomes part of Nature – which then also meant that the soul of the world – that created space – could be analyzed and quantified as to volume and magnitude.

<sup>274</sup>The Eucharist in the early years of the Church was a public activity of sharing bread and wine, but by the Middle Ages it became associated with seven Graces and linked to the ritual of Confession and Penance. It was on the presentation of the Host that the parishioners were instructed to look briefly on the raised Host, acknowledge it, after which they were to look down and contemplate the body and blood of Christ. This sacrament was intended to initiate purification, but it also required fulfilling the expected penance of assigned prayers. However, the invitation to receive the Host and put the whole process of redemption into action was contingent on visual acknowledgement of the Host, which was raised high for this purpose. See Rosalind and Christopher Brooke, *Popular Religion in the Middle Ages: Western Europe 1000-1300*, London, Thames and Hudson, 1984, p. 115-119.

<sup>275</sup>As with Bernard Silvester (twelfth century), sight was considered the most dominant sense by the medieval writers, and light was the closest earthly manifestation of divinity – the reasoning being that there was a telescoping from the greater to the lesser. The eyes function like the sun: “*The inner light and daylight of the soul correspond to the rays of solar fire [in the greater world]... From the [general] concourse [of light], the power and capacity of seeing draws the cause and matter of what exists towards the form of the things themselves. The piercing quality of this light stretches itself forth and makes a judicial examination.*” See Brian Stock, *Myth and Science in the Twelfth Century*, Princeton, Princeton University Press, 1972, p. 214-215.

<sup>276</sup>Etienne Gilson, *Reason and Revelation in the Middle Ages*, New York, Scribners, 1938, p. 276-278. God created the empyrean... “*a perfectly homogeneous luminosity; it is therefore probable that we should consider light as the definite form with fully determinate actuality that is to confer their successive forms upon the matter of bodies...*”

See also Roger French and Andrew Cunningham, *op. cit.* p. 210-213: the first stage of illumination, according to Bonaventure, is to consider creation according to seven conditions – origin, magnitude, multitude, beauty, plenitude, operation and order. Each of these properties attests to a different aspect of God. The second stage concerns the way the whole world can enter into the human soul through the doors of the senses. The third stage is to move from these lights, given from the outside, to the mirror of our own minds – memory and intellect, where the divine image shines. The fourth stage is the inner sense, the highest beauty that leaves our soul caught up in wonder. The fifth stage is turning from the visible to the invisible or eternal traits of God, or to contemplate Being, that is, to contemplate God. The sixth stage moves from Being to the Good, the principle foundation for the emanation from God. And the final but rarely reached seventh stage is the passing over to the side of God, like St. Francis in his reception of the stigmata, through the ecstasy of contemplation in the presence of the ultimate light – *Fiat Lux*.

See also Arthur Hyman and James J. Walsh, *op. cit.* p. 474-478. Robert Grosseteste can be paraphrased on light: the first bodily form or corporeality is light, and the form or species of all bodies is light – *lux*; but the light of the highest bodies is more spiritual and simple, the lower bodies is more bodily and ‘plurified’ (pluralized) light. Light diffuses in all directions so that a sphere of light as great as one can imagine happens instantaneously from a single point of light.

See also Rosario Assunto, *Die Theorie des Schoenen in Mittelalter*, p. 223-225: the light of Grosseteste.

<sup>277</sup>The New Testament testifies to Christ’s promises of the afterlife. In the Last Judgment, good was separated from evil but what remained unclear was what happened between the time of a person’s death and the Last Judgment. It became a custom that the living could therefore help the dead through their prayer and alms giving. Purgatory was a place where the bodies and souls of the potential good were made to suffer corporeally until their souls were cleansed of venial sins committed in life before they could enter heaven. See Donald F. Logan, *op. cit.* p. 288-295.

<sup>278</sup>Durandus of St. Pourcain, an Ockham precursor, simplified knowledge and being to individual existence – excluding divine illumination, intelligible species, seminal forms, principles of individuation – and shifting criteria derived from necessary knowledge away from metaphysics to nature and logic – propositions and demonstrations, stressing God’s freedom towards nature and Grace. What is future and undetermined is contingent because God is not the direct cause of his creatures’ actions; therefore the actions can occur freely. The paradox remains, however: God’s omniscience and free will – will is free and therefore the future is open. See Gordon Leff, *The Dissolution of the Medieval Outlook*, New York, Harper Torch Books, 1976, p. 33-34.

<sup>279</sup>I think it is worth suggesting that this is also perhaps a truer meaning of the concept of the world as flat

<sup>280</sup>Brian Stock, *op. cit.* p. 205-206.

<sup>281</sup>Erwin Panofsky, *op. cit.* p. 55-56. Panofsky also concludes that the achievements of Giotto speaks about pictorial space as a hollow body: “...it signifies a a revolution in the formal assesment of the representational surface. This surface is now no longer the wall or panel bearing the forms of individual things and ffigures, but rather is once again the transparent plane through which we are meant to believe that we are looking into space, even if space is still bounded on all sides. We may already define this surface as “picture plane in the precise sense of the term.”

<sup>282</sup>Richard Tamas, *op. cit.* p. 175-178.

<sup>283</sup>Rainer E. Zimmermann, *Naturphilosophie im Mittelalter*, Cuxhaven, Traude Junghans Verlag, 1998, p. 47. The problem with the study of Nature during the 13<sup>th</sup> century was not simply a question of physical empirical observation of its interaction or reactions, but always accompanying this enquiry was the question of why was it so in the first place – the difficulty in separating the form of the body from its material reality. See Roger French and Andrew Cunningham, *op. cit.* p. 135. Natural arguments were possibly first applied because the Friars' arguments centred on the natural world, and it was appropriate to counter the arguments of heretics. The Friars, however, always had as their theological purpose the support and subordination of these arguments to strengthen true doctrine.

<sup>284</sup>Needham carefully studied lines of communications regarding Scientific thought as it came from the East to the West. It was most strongly in the Middle Ages that Arab culture and European culture intersected on both scientific and theological thought. The Arab world was the channel through which the Greek writings of the Ancients reached medieval Europe. All important Greek texts were translated sometime during the seventh and eleventh century into Arabic, and translated into Latin sometime from the early eleventh and into the twelfth century. Their influx was due to the continual Arab occupation, primarily of Spain and southern Italy. The texts brought to Spain found their way throughout different parts of Europe, where they were then translated into Latin. Robert Grosseteste was one of the leading translators at the time. Joseph Needham, *Clerks and Craftsmen in China and the West*, Cambridge University Press, 1970, p. 15.

<sup>285</sup>In the opening remarks of his *Optical Science*, Chapter II, Bacon writes: "writers on optics give us a means to understand the biological function showing how the visual nerves descend from the membranes of the Brain and from the lining of the cranium, but no one explains all things necessary in this matter." Roger Bacon, *op. cit.* Vol. II, p. 421.

<sup>286</sup>Due to the profusion of translations of practically the entire oeuvre of Aristotelian texts, including additions by Avicenna with his comments – and those of Averroes (the translation of Aristotle was annotated by Averroes, who put a his own spin on it) – much was made available, permitting a new set of logical arguments. See Gary B. Ferngren (ed.), *Science and Religion*, Baltimore, John Hopkins University Press, 2002, p. 65-72.

<sup>287</sup>*Ibid.* p. 67. Grosseteste wrote his arguments in a form that suggested that the new understanding could only contribute to the church's strength in defending its Faith, while Bacon's argument was that the new knowledge would drive terror into the hearts of nonbelievers and assist in their conversion. Albertus, on the other hand, having taken up the problem of eternity and the world, suggested that philosophy is not equipped to deal with such questions. Thomas Aquinas argued both positions, suggesting that the world could be both eternal and created, since God created it and the world depended on him for its existence.

<sup>288</sup>David C. Lindberg, *Theories of Vision from Al Kindi To Kepler*. Chicago, University of Chicago Press, 1996, p. 104-146. (The Optical Synthesis of the Thirteenth Century).

<sup>289</sup>In the *First book of Moses – Genesis*, Chapter 1: 1-3: "In the Beginning God created the Heaven and the Earth...And God said let there be light: and there was light."

<sup>290</sup>Bacon, in his opening remarks on optical science, gives his readers a good idea of how frustrating it was for him to sift through the various translations to get a clear sense of the ideas presented. In fact it was partly for this reason that he decided to embark on the project of the *Majus Opus*.

<sup>291</sup>G.E.R. Lloyd, *Greek Science after Aristotle*, New York, Norton, 1973, p. 33-34.

<sup>292</sup>'Extramission' are rays projecting from an object to the eyes, and intromission is its inverse – rays projecting from the eye. For Aristotle, the sense organ of the eye is not on the surface but resides inside the eye. Aristotle concludes that part of the eye must be both transparent and receptive to light. Plato's theory consists of streams issuing forth both from the object to the eye and from the eye to the object. Both conclude that the eye and the external media become one by the transmission of motion. David C. Lindberg, *op. cit.* p. 9.

<sup>293</sup>*Ibid.* p. 8-9. For Aristotle this means motion in the broadest sense.

<sup>294</sup>*Ibid.* p. 9.

<sup>295</sup>Plato, *The Republic*, A.D. Lindsay (trans.), London, Everyman, 1999, Book 6, 507 d, p. 196-202.

<sup>296</sup>*Ibid.* p. 196-202. "The idea of optics then never uses the help of any sensible object at all, but using only the forms themselves, it descends to them and with Form it ends" 511 a,b, c. Plato's summary adds "... [that good or illuminated sight] Therefore I describe this class of intelligible; but I said that the soul is compelled to use hypothesis in its investigation of it, and does not go to a beginning, since it is unable to step out of and beyond hypothesis but uses as images those originals from which images were made by the objects lower down, and which as first principle makes the world intelligible and that four segments are the four states which arise in the soul. The highest being intelligence, the second understanding, the third faith and the last imagining."

<sup>297</sup>French and Cunningham write that it is possible to see in the writings of Grosseteste an obsession with Dionysian writings. He also took up the Franciscan's interest in light, promoting in this way new fields of study and calling on others to consider studying nature with these new approaches, namely the knowledge of things as they are in themselves. Roger French and Andrew Cunningham, *op. cit.* p. 231.

<sup>298</sup>Stephen Morely Straker, *Kepler's Optics: a study in the development of seventeenth century philosophy*, Ann Arbor, Michigan, U.M.I., 1971, p. 241. Straker lists the works at the disposal of Grosseteste: *Euclid's Optics*, *Catoptrics*, Alkindus's *De Aspectibus*, the Pseudo Euclidean *De Speculis*, Aristotle's *Metaphysics*, and the *Meteorology* and *Arithmetics* of Boethius.

<sup>299</sup>*Ibid.* p. 101, 103. These lines of speculation were developed more thoroughly by Roger Bacon in the *Majus Opus*. According to Straker (p. 101), Grosseteste explained that "the straight line is the most effective, the strongest, and the most perfect route of natural action".

<sup>300</sup>David C. Lindberg, *op.cit.* p. 9.

<sup>301</sup>Phillip Cary, *op. cit.* p. 39. Confession 7:23: "I entered and saw with the eye of my soul, such as it was, above the same eye of my soul, above my mind, the unchangeable light – not the common light of the flesh, nor as it were something greater of the same kind, shining more brightly...I was below because made by it, Whoever knows truth, knows it, and whoever knows it knows eternity." Augustine, using the Platonists as a source, intentionally does not inform his readers that the platonist concept of looking inward is related to the idea that we are God.

<sup>302</sup>Roger French and Andrew Cunningham, *op. cit.* p. 249.

<sup>303</sup>*Ibid.* p. 245. Pecham's *Perspectiva*, which also reflects a position very similar to Bacon, was used as a fundamental work in the arts course of many universities in the fourteenth century, and would therefore have been readily available to Giotto.

<sup>304</sup>Arnold Davidson, "Miracles of Bodily Transformation", Caroline A. Jones and Peter Gallison (eds.), *Picturing Science Producing Art*, New York, Routledge, 1998, p. 105.

See also *Encyclopedia Britannica*, Chicago, 1950, Volume 7, p. 396; this summary refers to H.O Taylor's *Classical Heritage of the Middle Ages*, 1903. The Britannica article has been useful in distilling the enormous complexity of the source material on this subject. The main points of the Dionysian doctrine are: Sublime transcendence; the source was not inert, but variable, from which life streamed to all lower orders of existence; Life, which through love floods forth from God, has a counter-flow drawing its own creation back to itself; Evil does not exist, and it is severance from God who is a triune accessible through the ecclesiastical triad of Baptism for Purity, Communion for Enlightenment, and Holy Chrism for Perfection; between Man and God are the Seraphim, Cherubim and Thrones; and Virtue's Powers and Principalities, with Archangels and Angels that help to raise Man by purification, and perfection. All of these triads function like reflecting pools – reflecting the Divine light or illumination from one to the other, from the highest to the lowest with the Angels closest to man. The representatives on earth are Bishops – the Hierarchs, Presbyters – the light bearers, and Deacons – the Servitors. The third triad consists of Monks who are in a state of perfection, Layity who are in a state of illumination, and Catechums in a state of purification. Theology explains symbols, stating that he who knows God must rise above them. Its translation into Latin influenced the scholastic philosophers, Peter Lombard, Albertus Magnus and Thomas Aquinas and many others.

<sup>305</sup>G.E.R. Lloyd, *op. cit.* p. 31-37.

<sup>306</sup>Roger Bacon, *op. cit.* Volume II, p. 442.

<sup>307</sup>*Ibid.* p. 419. See also Roger French and Andrew Cunningham, *op. cit.* p. 234: the Franciscan experience was involved with both the mystic and ecstatic experiences, and light was central to their spiritual practice. Bonaventure wrote: "*The spiritual journey for a Christian involves travelling mentally from the sensible to the intelligibles this being the road to God.*" And Grosseteste wrote that "*The highest part of human intelligence is to be capable to have full knowledge of God, the ultimate illumination, without the senses – if it were not for the clouded and corrupting influence of the body.*"

<sup>308</sup>See the diagram, Roger Bacon, *op. cit.* Vol. II, p. 442.

<sup>309</sup>*Ibid.* p. 419-448. The first distinction deals with the mind and brain its relationship with the organ of vision; the second distinction deals with the nerves leading to the eye; the third distinction, the sphericity and centality of all parts of the eye; the fourth distinction is the properties of the cornea humor and *uvea*.

<sup>310</sup>Roger Bacon, *op. cit.* Vol. II, Chapter 2, p. 457. (On the Fifth Distinction)

<sup>311</sup>*Ibid.* p. 463

<sup>312</sup>*Ibid.* p. 452-493. Bacon next sets out nine conditions that are required for vision:

- 1) Light must be present for vision.
- 2) Proper distance is required for vision.
- 3) The visible object must confront the eye.
- 4) The magnitude of an object must be large enough for the senses to perceive, or the object cannot be too large – example: we can only see less than one quarter of the sky at any given time due to the character of the visual pyramid; the angle of vision can be measured by inscribing from the side of the *uvea* a square to which a right angle corresponds.
- 5) The effect of deep space on vision is the effect of shading; the more space between the viewer and that seen, the more the medium of the air becomes denser and darker. Also the species emitted from the object

becomes weaker with distance and stronger close up – example: blue in the distance becomes black. Light rarefies [in today's terms 'expands'] air as it generates heat. Vision must take place by means of its species, emitted by the contact of the force with the visible object. Vision terminates as distance weakens its species.

6) The condition necessary for sight is the rarity of the medium between the eyes and the object seen; solid objects block vision.

7) The species from the eye is not produced instantaneously but requires time, sensible time, since no finite force acts instantaneously. Species is not a separate body nor is it changed as regards itself as a whole from one place to another. The species that is produced in air, the emanations or forces departing the object, is not separated from its form, neither can it be separated from its matter in the transmission of light. Bacon also concludes that light travels faster than, for example, sound or odor; therefore the transmission of light has a different time than other sensory impressions. Because of this, vision of the species and its visible multiplication takes place so fast that it is imperceptible in sensible time. Judgment, on the other hand, is made in perceptible time.

8) The eighth condition requires that the eye is healthy and not handicapped, since otherwise it will also handicap judgment.

9) Without these eight conditions vision cannot function.

<sup>313</sup>*Ibid.* p. 452-453. What writers on perspective call perception, he writes, is part of both the human and animal worlds. Perception he defines as the ability to make predictions and judgments, and such things as the recollection of motion, rest and distance were associated by philosophers and metaphysicians with the concepts of Universals and Particulars. Bacon argues that Universals and Particulars can only represent intuitive responses to a situation, with the former the result of what we today would call instinctual imprinting, and the latter the result of memory. He gives as an example of Universals a young lamb running from a wolf, an animal it has never seen. In the same example, the operation of Particulars can be seen when, having narrowly escaped the wolf the first time, in the second encounter the lamb – armed with memory – flees with greater skill. For Bacon, this traditional philosophical reasoning on the basis of Universals and Particulars is all very well, but limits the philosophical methodology to sense perception alone and relies solely on the faculty of *cognitiva* via memory, the storehouse – one might say – of intuitive intention.

<sup>314</sup>Roger French and Andrew Cunningham, *op. cit.* p. 245. Different from this methodology is the kind of intention based on syllogistic reasoning. To demonstrate how this works, he gives as an example a bee. The bee creates hexagonal forms so that the young cannot fall out and the honey can be stored. Such an intention, or assignment of an intention, could only be made on the basis of a process of reasoning that has nothing to do with memory, but only to do with deductive logic. It is with this kind of argument that he attempts to distinguish a new line of rational argumentation from the traditional dependence on intuition. The specific example of the bee's hexagonal forms is no accidental choice. While I am not going to elaborate on or refer here to the other prominent figures of the thirteenth century that wrote on *Perspectiva*, both John Pecham and Witelo also adopt the Dionysian theme and take up the idea that deals both with light and the action of the natural body: that every natural body, visible or invisible, diffuses power radiantly into other bodies, the proof being that a natural body acts outside of itself through the multiplication or propagation of its form or species. Because action along a straight line is easier – has the least resistance and therefore is stronger and more forceful – every natural body, visible or not, multiplies its species in a continuous straight line, and therefore radiates. Central to Witelo's concerns are light, geometry, and *virtus*.

<sup>315</sup>Roger Bacon, *op. cit.* Vol. II, p. 576-582. At the very end of the chapter, Bacon is in rapture over the use of mirrors and the beauty of their reflections.

<sup>316</sup>*Ibid.* p. 579.

<sup>317</sup>*Ibid.* p. 576.



<sup>318</sup>In the thirteenth century, Hueck writes, in the circle of the Pope knowledge about and surrounding optics was of great interest. Also in Rome during this time there was a lively interest in the optical properties of foreshortening, and she believes that this interest would not have escaped the practicing artists. Giotto, even if he had not served in an apprenticeship, would have been interested in the course of his own life in geometry and optics, as they would have served him to clarify certain issues. As I have already discussed, and Hueck also suggests, Giotto could easily have been familiar with Fibonacci and Euclid and, I would add Bacon, as it is well known that Giotto spent some time in Rome in and around 1300 where, among other centres of learning, he could have participated in or heard of these kind of discussions. Irene Hueck, "Giotto und die Proportion", Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 293-305.

<sup>319</sup>Francesca Flores D'Arcais, *op. cit.* p. 326, believes that the influence of the young Ambrogio Lorenzetti is felt in terms of an expanded feeling for space that thrusts the composition forward, a perspective from a closer point of view.

<sup>320</sup>John White, *Art and Architecture, 1250-1400*, p. 335. The author states that the Bardi Chapel is different in both composition from Assisi, and compositional design and narrative structure from Padua. In the Bardi Chapel there is the *planar stress* and limitation of architectural spaces and a concentration on the centrality of the main protagonist. Also, a seemingly organic growth of design that fuses figures and architecture for a single dramatic moment. As I understand it, each moment is crafted to conform at some level to the broadest understanding of vision, not independent of the aspiration both of redemption and in the Divine.

<sup>321</sup>Francesca Flores D'Arcais, *op. cit.* p. 327. D'Arcais also noticed that the buildings appears almost symmetrical, with a barely perceptible divergence to accommodate the visitor viewing the painting from outside the chapel itself.

<sup>322</sup>Creighton Gilbert, "Florentine Painters and the Origin Of Modern Science", Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, p. 72.

<sup>323</sup>With the Sultan placed high up in the composition at centre, and looking to the left at the fleeing priests, while St. Francis and the fire are placed at the bottom right, looking towards the Sultan, Giotto constructs in the viewer a constant movement of the eyes – looking from left to right, right to left – the very embodiment, as he states, of judgment. See John White, *Art and Architecture, 1250-1400*, p. 336.

<sup>324</sup>Erwin Panofsky, *op. cit.* p. 55.

<sup>325</sup>Bernard Silvester, a twelfth century friar, believed that the body was constituted by a mixture of the four elements – fire, water, air, and earth, in a harmonious union that might adorn the living being in the form of a divine imitation, formed in this way through the craftsmanship of the divine fabrication, nature acting as the coordinator: "This fire or inner light –daylight of the soul is the power of seeing and draws the cause and matter of what exists towards the thing of the form itself, ... the piercing quality of this light stretches itself forth and makes a judicial examination..." Brian Stock, *op. cit.* p. 205, 214.

<sup>326</sup>Light is central to Bacon's view of what wisdom is, and how it is acquired, and true illumination meant that one could see God. See Roger French and Andrew Cunningham, *op. cit.* p. 239-243.

<sup>327</sup>Regarding this fresco, White writes: "Plane succeeds plane within a wholly unadorned architectural structure. The building provides a frame for each of the main figures..." John White, *Art and Architecture, 1250-1400*, p. 336.

<sup>328</sup>*Ibid.* p. 311. The frescoes' architecture is illuminated from a single source as though illuminated from the single window and light source at the entrance.

<sup>329</sup>For an interesting interpretation, see Bruce Cole, "Another Look at the Stigmatization of St. Francis", Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, p.128. The main point of this evaluation is the difference in the stigmatization between the Assisi cycle and the Bardi Chapel. Cole points to the Reception of the Stigmata in the Bardi Chapel as being much more emotively charged by the positioning of the body and through the gestures of surprise and by the facial expressions depicted. While that is true, I point to Bacon's analysis of vision as a perceptual act engendering emotive states.

<sup>330</sup>Bonaventure of Bagnoregio, "Major Legends of Saint Francis", Chapter 15, Regis J. Armstrong and collaborators (eds.), *op. cit.* Vol. 2, p. 647. "Immediately the holy man began to reflect the light radiating from the face of God, and to glitter with many great miracles..." This mentioning by Bonaventure of light radiating from the face of Christ does not specify that the points at which stigmatic marks appear from Christ to St. Francis are rays of illumination. One can be quite sure that this interpretation is a pure artistic invention related to the whole culture surrounding light.

Note that the position of surprise was necessary to show the wounds received as opposed to the normal position of prayer. Bonaventure was self consciously mimetic in the legend, offering the idea of penetrating shafts of light as a great mystic contemplation of the divine inner source. It is Bonaventure who insists on St. Francis as a figure in imitation of Christ – changing Celano's *eleven* friars arriving in Rome to accept the Rule to *twelve* to coincide with the apostolic dozen. See Julian Gardener, "The Louvre Stigmatization and the Problem of the Narrative Altarpiece", Andrew Ladis (ed.), *Giotto as a historical and literary figure*, p. 315-348.

<sup>331</sup>Three interesting diagrams from both the 12<sup>th</sup> and 13<sup>th</sup> century are graphic illustrations of the eye. The hollow optic nerve is made up of five layers, and examining it I would say the hollow nerve is attached to the eye that has the five layers or outer rings. They give graphic clarity to the idea of the eyes, the optic nerve, and the common nerve. But the clearest one appears in an Arabic manuscript from sometime in 1000 A.C.E. in which a clear relationship is shown of the hollow optic nerve from the brain cavity crossing in the optic chiasma to the eyes. Please see diagram and explanation in Edwin Clarke and Kenneth Dewhurst, *op. cit.* p. 40-43.

<sup>332</sup>Francesca Flores D'Arcais, *op. cit.* p. 326.

<sup>333</sup>In the earlier versions, in an enamel reliquary from Limoges (1230) there is faithfully reproduced the verbal account of Tommaso da Celano's *Vita Prima*, the only account written before 1230. In this depiction, the Seraph hovers over Francis and Francis looks at the viewer. Davis suggests that the artist has tried to give the impression that the vision and stigmatic reception are not simultaneous. This is very different from the Bardi Chapel. Bonaventure's narrative is also closely followed, and there is a simultaneous exchange between the projection and reception of the wounds. See Arnold Davidson, *op. cit.* Caroline A. Jones and Peter Galison (eds.), *op. cit.* p. 106-109.

<sup>334</sup>Gilbert suggests that what Massacio and Giotto and other Renaissance artists share is the assumption that physical truth is a pre-condition. I must add, however, that this physical truth is interdependent with the theological belief of truth or illumination at the time. Gilbert draws a dividing line between Massacio and Giotto by stating that Massacio's application of "perspective" is more like pure science – objective and repeatable. I argue that Massacio's desire for the systemic exactitude, using systemic measurements, was just as theologically motivated – perspective being the perfect mirror or the *mirror of perfection*. Compare with Masaccio's *The Trinity* and its perspective construction. Creighton Gilbert, *op. cit.* Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, p. 73.

See also Volker Hoffman, "Masaccio's Trinitatsfresco: *Die Perspective Konstruktion und ihr Entwurfsverfahren*", *Mitteilungen Des Kunsthistorischen Instituts In Florenz*, XL Band, Heft ½, 1996. Here the viewer is presented with Christ – the son who had died on the cross as an act of redemption for all of Mankind – by God the Father himself, not by the Seraph. Masaccio permits the viewer the same privilege as St. Francis encountering Christ on the Cross. It is Mary Magdalen who confirms this by pointing to Christ while looking at the viewer. The perspectival projection converges at the level of the viewer, and constructs the image as both behind *and on* the surface, and it is the viewer who forms the other part of the equation as they approach and fuse with this point or *common nerve*, the ultimate point of the image. The image-like Vision continues towards the viewer and the vision of the viewer continues towards and into the Image. What Giotto contributed was the recognition of the point of intersection *right at the intersection of the surface of the mirror of perfection* which encompasses a much more complex set of beliefs grounded in syllogistic logic, a ricocheting between image and viewer.

<sup>335</sup>White comments on the frequent use of geometric terms applied to the analysis of Giotto. He believes it is symptomatic of the importance he placed on the figures, their position and architecture, and their relationship to the pictorial surface. John White, *Art and Architecture, 1250-1400*, p. 318.

<sup>336</sup>According to Cary, the concept of intelligibility is rooted in Plato's notion that seeing with the eye of the mind is superior to seeing with eye of the body – the body simply being an obstacle to elucidation. St. Augustine, when he formulated his notion of illumination, did not know that Aristotle's notion of inwardness in the search for knowledge-of-self had its origins in his understanding of the spinal nerve that controls much of the action of the body. Aristotle's understanding of inwardness is connected with knowledge of the self or the knower, and what is known. St. Augustine, unfamiliar with these ideas of Aristotle's, interpreted Aristotle as a looking-for-the-other, and his version of knowledge of self consequently was one of looking in and then looking up at the other, knowing the other who deserves to be the ultimate object of love. Therefore, for St. Augustine, illumination is never of the self, but of the Self-illuminated through the other. Phillip Cary, *op. cit.* p. 141.

<sup>337</sup>Roger French and Andrew Cunningham, *op. cit.* p. 235. Genesis: "the earth was without form and God said let there be light."

<sup>338</sup>Erwin Panofsky, *op. cit.* p. 49. (Proclus, 410-485 A.C.E.)

<sup>339</sup>John Henry Bridges, *The Life and Work of Roger Bacon*, London, Wiliam & Norgate, 1914, p. 18. "The terms in which Bacon bears testimony to [Grosseteste's] encouragement of philology, to his attempts to apply mathematical method to the study of physical phenomena, to his disregard of the philosophy of the schools founded on bad translations of Aristotle, would be conclusive as to his personal contact with the great man, even though it were not confirmed by reference to his scientific writings, in which Bacon's debt to him is unmistakable.

<sup>340</sup>George Sarton, *Introduction to the History of Science*, Vol. II, Part II, Baltimore, William & Wilkins, 1931, p. 583. See also Stephen Mory Straker, *Kepler's Optics*, Ann Arbor, Mich., U.M.I., 1971, p. 101. Straker writes that Grosseteste had access to the translated works of Euclid's Optics and Catoptics, Alkindus' De Aspectibus, the pseudo-Euclidean De Speculis, Aristotle's Metaphysics and Meteorology, and the Arithmetics of Boethius. These works argue, in effect, for the fundamental role of geometry in the study of causes. As Grosseteste argues, every natural agent acts in the same way as does a source of illumination: the agent sets out its species along geometrical lines.

<sup>341</sup>Stephen Mory Straker, *op. cit.* p. 103-104. "Grosseteste brought about a new enthusiasm for optics and the study of optical treatises among the natural philosophers of the 13<sup>th</sup> century".

<sup>342</sup>John Henry Bridges, *op. cit.* p. 17-18.

<sup>343</sup>Arthur Hyman and James J. Walsh, *op. cit.* p. Roger Bacon, *Opus Majus*, Robert Belle Burke (trans.), New York, Russell & Russell, 1962, p. 480-484. Bacon gives the example from the *Tusculan Disputations*, of a small boy, questioned on the geometrical truth, replied as though he had learned geometry.

<sup>344</sup>J.V. Field, *Invention of Infinity: mathematics and art in the Renaissance*, Oxford, Oxford University Press, 1997, p. 14-16.

<sup>345</sup>Schrenk writes that Plato started the tradition of applying numerical value to ethics in his lecture on "The Good", and Xenocrates after him assigned a numerical value to the soul. The analogy between God and the monad is written by Nichomachus in which, much later, Cicero in *Somnium Scipions* constructs a monad with all three of the Neoplatonic hypostases: One, Mind, and Soul. Lawrence P. Schrenk, "God as Monad: the philosophical basis of medieval numerology", Robert L. Surles (ed.), *Medieval Numerology*, New York, Garland Press, 1993, p. 3-10.

<sup>346</sup>Robert D. Stevick, "The Form of the Phoenix: a model of its number, proportion and unity", Robert L. Surles (ed.), *op. cit.* p. 39. *The Phoenix*, an old English poem, was very carefully divided in sections that are mathematically related to the initial verse of 84 lines; the number of lines – when a graph is made – form a triangle appearing like the phoenix itself.

<sup>347</sup>Mystical number symbolism originated with Dionysian the Areopagite who, in the fifth century, speculated on the nature of the Super-essential. That is based on a kind of hierarchy in which one starts with the divine symbolism and, trying to go beyond it, one reaches "our power to behold in simple unity the Truth" because the symbols that were divine are understood to be numerical. Kay Brainerd Slocum, "Speculum Musicae: Jacques de Liege and the art of musical numbers", Robert L. Surles (ed.), *op. cit.* p. 13.

<sup>348</sup>Kate Frost, "John Donne, the Number 23 and the Tradition of Autobiography", Robert L. Surles (ed.), *op. cit.* p. 71-104.

<sup>349</sup>Phillip J. Davis and Reuben Hersh, *The Mathematical Experience*, Boston, Houghton Mifflin, 1982, p. 100-103.

<sup>350</sup>It should be noted that the matter of numbers is clearly covered in the Bible's Book of Numbers. See John Brown, Reverend, *The Self-Interpreting Bible: Old and New Testament*.

<sup>351</sup>Umberto Eco, *Art and Beauty in the Middle Ages*, p. 29.

<sup>352</sup>Mario Livio, *The Golden Ratio*, New York, Broadway Books, 2002, p. 93-113. While traveling the Mediterranean – Greece, Egypt and Syria – Livio concluded that Hindu and Arabic numerals that indicated place-value principles were superior to Roman numeral systems. The old system depended on numeral notations that were always about multiplying and adding, difficult to do if one does not have an abacus, which during Fibonacci's time had counters sliding along wires. Livio decided to write his book as a way of introducing the Arabic nine numerals into the commercial environment in which Pisa, as a large trading city-state, played a large role. His introduction of algebraic problems are more rhetorical than about solving specific problems.

<sup>353</sup>Fibonacci developed accounts that were both in Roman and Arabic numerals. Phillip J. Davis and Reuben Hersh, *op. cit.* p. 90.

<sup>354</sup>Dante Alighieri, *op. cit. Paradiso*, Chapter XII, lines 55-60, p. 129.

<sup>355</sup>Phillip J. Davis and Reuben Hersh, *op. cit.* p. 106-109. Since theology is the relationship between God and Man, mathematics pursues an ideal knowledge and investigates that ideal knowledge in relationship to the world. It is in this sense that there is a relationship between religion and mathematics.

<sup>356</sup>God can embrace any kind of number of infinity and number all the innumerable possibilities. However, when Man measures His mind and His knowledge, he can only measure it by our own standards, which are always subject to change. God is eternal, unchangeable and omnipresent. St. Augustine, *The City of God*, Henry Bettenson (trans.), London, Penguin, 1984, Book XII, Chapter 14 and 18, p. 487, 495.

<sup>357</sup>Umberto Eco, *op. cit.* p. 43. See also St. Augustine, *The Greatness of the Soul*, W. H. Stahl (trans.), New York, 1953, Chapter 8-11.

<sup>358</sup>Dante Alighieri, *op. cit.*, *Paradisio*, Chapter XII, lines 49-53, p. 129.

<sup>359</sup>N. Ya. Vilenkin, *In Search of Infinity*, Boston, Birkhäuser, 1995, p. 11.

<sup>360</sup>Samuel Y. Edgerton, Jr., *The Heritage of Giotto's Geometry: art and science on the eve of the scientific revolution*, Ithaca, Cornell University Press, 1991, p. 26.

<sup>361</sup>Samuel Y. Edgerton, Jr., *op. cit.* p. 31. Italics my emphasis.

<sup>362</sup>Roger Bacon, *op. cit.* Vol. 1, p, 175-176.

<sup>363</sup>Nancy Y. Wu (ed.), *Ad Quadratum*, Aldershot, England, Ashgate Publishing, 2002, p. 1-9.

<sup>364</sup>*Ibid.* p. 5.

<sup>365</sup>Konrad Haderlein, "Two, Three and Eleven", Robert L. Surles (ed.) *op. cit.* p. 123-125.

<sup>366</sup>The geometric figures representing these encounters between heaven and earth were utilized like talisman and applied for practical needs, such as curing an illness, erotic desire, business success, and so on. While we look at them as simply pleasing designs, they represented struggles between good and evil, the sacred and divine. Phillip J. Davis and Reuben Hersh, *op. cit.* p. 100-109.

<sup>367</sup>The question is always whether the thickness of the walls should or should not be included to arrive at an exact proportion. Also, despite architectural intention, the actual building materials and processes very likely departed from the plan's precision. Eric Fernie, "Introduction", Nancy Y. Wu (ed.), *op. cit.* p. 1-9.

<sup>368</sup>It is important to distinguish between a modular and a geometric system: a modular system stems from preconceived measures, like meter or foot, while a geometric system is related to the generation of figures by straight lines and compasses to establish proportions by relationships. James Addiss, "Measurement and Proportion in Romanesque Architecture", Nancy Y. Wu (ed.), *op. cit.* p. 58-71, 80.

<sup>369</sup>Rona Goffen, *op. cit.* p. 9.

<sup>370</sup>How to verify one's intuitions and assumptions when there is a lack of concrete evidence makes the whole project vulnerable to criticism and over-speculation. However, I have tried my best to only follow those leads that became obvious as I was reviewing the images over time. And only then did I hit upon the idea that there might indeed be some kind of structure other than the obvious architectural projections.

<sup>371</sup>Otto von Simpson, *The Gothic Cathedral: origins of Gothic architecture and the medieval concept of order*, Princeton, New Jersey, Princeton University Press, 1974, Bollington Foundation Series, 48, p. x-xviii.

<sup>372</sup>Honnenour, Villard de, *op. cit.* p. 62-65. . In the notebook of the artist active between 1255 and 1250 one can see in his drawings – whether of faces, bodies, animals or cathedrals – that the preoccupation with analyzing and directing a form according to geometric principles is always present, it is touching to see his attempts to make proportionate geometrical analysis for the construction of figures, animals and objects, placing a great deal of emphasis particularly on buildings and their convexity and concavity.

<sup>373</sup>Michael Baxendall, “*Petrarch: painting as the model of art*”, Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 221, 248-237.

<sup>374</sup>John White, *Art and Architecture, 1250-1400*, p. 335.

<sup>375</sup>Both those of the ceiling and those of the wall in the Arena chapel in Padua appear almost square, but are more horizontal than vertical. I put this choice of proportions down to the narrative impulse. Irene Hueck, “*Giotto und die proportion*”, Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 296.

<sup>376</sup>Duccio’s Rucellai alterpiece from Santa Maria Novella, Cimabue’s alterpiece from Santa Trinita, and Giotto’s alterpiece from Ognissati. Joel Brink, “*Measure and Proportion in the Monumental Gabled Altarpieces of Duccio, Cimabue, and Giotto*”, Andrew Ladis (ed.), *Giotto: master painter and architect*, New York, Garland, 1998, p. 285-293.

<sup>377</sup>While he does not go into the character of the geometrical figures as such, it is interesting to make a relationship between the notion of relational possibilities that geometric figures are able to generate infinitely, and the framing of a narrative space that appears to continue infinitely, without apparent end. Irene Hueck, *op. cit.*, Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 297. See also Mark J. Zucker “*Figure And Frame in the Paintings of Giotto*”, Andrew Ladis (ed.), *op. cit.*, p. 347.

<sup>378</sup>Irene Hueck, *op. cit.* Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 297.

<sup>379</sup>John White, *Art and Architecture, 1250-1400*, p. 320-336. “*The planar stress and careful limitation of clearly defined architectural space, characteristic of all the Bardi frescoes the concentration of the central figures; the seemingly organic growth of a design that fuses figures and architecture for a single, meaningful moment, dramatic movement, are present in all their simple seeming subtlety.*”

<sup>380</sup>Bruce Cole, *op. cit.* p. 99. Giotto has seen that the real centre of the action is not St. Francis (who is over to the extreme right), but rather the Sultan. Isolated and raised high on his throne, he is overcome by St. Francis’ piety and strength of belief and generates all the action that occurs around him. The sultan’s head is turned in one direction towards his men, and in another opposite direction his arm points to St. Francis – a crossing that Baxendall suggests is a mirroring of his conflicted psychological state.

<sup>381</sup>*Ibid.* p. 101. “*Giotto was quite involved with the flow of the narrative across the picture plane at the time he painted the Bardi Chapel.*” The grid, I suspect even though Baxendall does not mention it; but he further notes, “*that the rhythm of the movement from side to side is more attenuated than in any of the frescoes seen in the Arena Chapel; the elaborate group of the sultan’s men is a good case in point.*”

<sup>382</sup>John White, *Art and Architecture, 1250-1400*, p. 320-321. “*...Herod is set apart upon the left. His clear and lonely gestures sets the tragedy in motion.*”

<sup>383</sup>Max Imdahl, *Giotto: Arenafresken, Ikonographie. Ikonologie. Ikonik*, Frankfurt, Wilhelm Fink Verlag, 1996, p. 21. The architectural setting in the Arena Chapel has perforated views through the architecture that holds the narrative and develops a systematic spatial organization. See Bruce Cole, *op. cit.* p. 103: "As in the Paduan frescoes the development of the fresco space is quite restricted. ...The actual space is closer [in the Bardi Chapel] and the viewer closer to the frescoes. Thus any major break in the wall surface by the introduction of deep illusionistic perspective would be even more obvious."

<sup>384</sup>The gesture of the raised hands remained a gesture of an attitude of prayer carried over from the early Christians. It is possible that this gesture of raised hands was a combination of surprise and prayer. Moshe Barash, *Giotto and the Language of Gestures*, Cambridge, Cambridge University Press, 1988, p. 59.

<sup>385</sup>Irene Hueck, *op. cit.* Andrew Ladis (ed.), *Giotto as a Historical and Literary Figure*, p. 294.

<sup>386</sup>Rona Goffen, *op. cit.* p. 62-62.

<sup>387</sup>*Ibid.* p. 62.

<sup>388</sup>*Ibid.* p. 22.

<sup>389</sup>Saleritan anatomists engaged in actual dissection of the animal body. By the middle of the thirteenth century, Aristotle's natural history and much of Galen's had been translated, as well as Avicenna and most of the great Arabic writers. George W. Corner, *Anatomy*, New York, Paul B. Hober, 1930, p. 12.

<sup>390</sup>Gary B. Ferngren, *op. cit.* p. 78-79. Abu'Ali Ibn Sina, in Latin Avicenna (980-1037 A.C.E.), an Arab physician, philosopher and mathematician, translated Galen and Hippocrates and modified their thoughts to some extent with Aristotle and his own personal observations. The translation into Latin was an inferior one, but became the *Canon of Medicine*, the standard medical text for physicians until the middle of the seventeenth century.

See also Charles Singer, *A Short History of Anatomy from the Greeks to Harvey*, New York, Dover, 1926, p. 68-69. The most important of all translators from the Arabic was Gerard of Cremona (1115-1185 A.C.E.). He translated some 92 texts, among which were important medical texts by Avicenna. Without Cremona's texts, scholasticism would not have been possible.

<sup>391</sup>Richard Sennet, *Fleish und Stein*, Berlin, Surkamp, 1997, p. 207.

<sup>392</sup>Charles Singer, *op. cit.* p. 47-51.

<sup>393</sup>Peter Biller, "John of Naples, *Quodlibets* and Medieval Theological Concern with the Body", Peter Biller and A.J. Minnis (eds.), *Medieval Theology and the Natural Body*, Rochester, University of York, 1997, p. 9.

<sup>394</sup>*Encyclopedia Britannica*, Chicago, 1950, Volume 9, p. 974, col. 2.

<sup>395</sup>Charles Singer, *op. cit.* p. 46-62.

<sup>396</sup>Billar presents five choices that could have been taken to make Galen's text acceptable: censoring the problematic section, banning the entire book, ignoring the problematic section, refuting it, or – by means of scholastic hermeneutics – rendering it acceptable. This last option was the choice, as it was with the Sultan of Egypt that the legend of St. Francis records as having converted to Christianity. Peter Billar, "*John of Naples, Quodlibets and Medieval Theological Concern with the Body*", Peter Billar and A.J. Minnis (eds.), *op. cit.* p. 9.

<sup>397</sup>Karl Sudhoff (ed.), *Zur Geschichte der Medizin Anatomie im Mittelalter*, Leipzig, Johan Ambrosius Bart, 1908, p. 94-124. In this publication there are comprehensive reproductions of medieval anatomical drawings that illustrate the importance put on the spine, the centrality of the heart and the filigree distribution of the veins, resembling a tree. Also there was an emphasis on the male and female reproductive system.

<sup>398</sup>Charles Singer, *op. cit.* p. 47-61.

<sup>399</sup>*Ibid.* p. 60. Blood in contact with the air in the left ventricle became elaborated into a higher type of *pneuma*, the *vital spirit*, which was distributed through the arteries and with the arterial blood. Among the arteries, some went to the head, and thereby *vital spirit* was brought to the base of the brain. Here the blood was minutely divided by the channels of the *rete mirabile*. In that mysterious organ, the blood became charged with yet a third *pneuma*, the *animal spirit*, which was distributed by the nerves, conceived of as hollow. The *rete mirabile*, a network of blood vessels of unknown function that lies at the base of the brain, in fact does not exist in humans or many other animals. Galen, having described it in the pig and ox, incorporated it into the system of the brain function so that medieval physicians assumed its presence in the human brain. See Edwin Clarkee and Kenneth Dewhurst, *An Illustrated History of Brain Function*, Berkeley, University of California Press, 1972, p. 56.

<sup>400</sup>Charles Singer, *op. cit.* p. 47-61.

<sup>401</sup>The first illustration of brain function comes from the 11<sup>th</sup> century – a drawing of a skull facing inwards and seen from above. The mental faculties are inscribed centrifugally, and are *fantasia* (imagination), intellect (reasoning), and *memoria* or memory; this is still in accordance with ancient Greek theory. Edwin Clarkee and Kenneth Dewhurst, *op. cit.* 11-31.

<sup>402</sup>*Ibid.* p. 13. The text describing the brain functions is a transcription of this work.

The diagram is structured as follows:

The circle is divided into five vertical columns representing the brain's five ventricles. A horizontal line divides the five columns into upper and lower compartments. Describing them from right to left

First ventricle:	sensus communis
Second ventricle:	Imaginativa or fantasia which is the resevoir of appearance perceived and things not perceived
Third ventricle:	fantasia or imaginativa
Fourth ventricle:	estimativa or cogitativa, which from things perceived elicits the appearances of things not perceived and composes and separates them precisely, which fantasia cannot do.
Two and three are identical and appear to indicate psychological function.	

<sup>403</sup>*Ibid.* p. 31.

<sup>404</sup>Henry Gray, *Anatomy, Descriptive and Surgical*, Philadelphia, Courage Books, 1974, p. 643.



<sup>405</sup>Jessalynn Bird, "Medicine for Body and Soul: Jaque de Vitry's Sermons to Hospitallers and their Charges", Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 91-108.

See also David C. Lindberg, "Early Christian Attitudes towards Nature", Gary B. Ferngren (ed.), *op. cit.* p. 53-54. In the three examples he gives, the actual practice of beliefs towards natural philosophy vary greatly from popular contemporary myths: Augustine and creation, the shape of the earth, and medicine and the supernatural. Christians did not reject a spherical earth. In favour of a biblical passage that suggested it, St. Augustine supported the application of natural philosophy and completed a translation of the *Literal Interpretation of Genesis*, in which he applied all of his knowledge of cosmology and biological-physical knowledge available to him. Apparently only two minor sources in the Middle Ages discuss in any serious way a flat earth theory. As far as medicine was concerned, Christians believed that origin of disease could be natural or divine.

<sup>406</sup>Biller writes that in the papal decree of 1277, little information relates to the practice of medicine. However, it limited the physicians' intervention in mental disorders and medical explanations of the impact of diet. It condemnations included: that Rapture and Visions occur only through natural processes; that by nutrition a man can become another, numerically and individually; that pleasure during the sexual act does not impede the action and use of intellect; that perfect carnal abstinence corrupts the virtue and the species. (i.e. that sin against nature, as an abuse during sexual intercourse, is not against the nature of the individual, although it is against the nature of the species.) Peter Biller, "Papal Decree", Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 39.

<sup>407</sup>*Ibid.* p. 43. See also Danielle Jaquart, "Moses, Galen, and Jaques Despars: religious orthodoxy as a path to unorthodox medical views", Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 39-45.

See as well Vivian Nutton, "God, Galen and Depaganization", Biller and Joseph Ziegler (eds.), *op. cit.* p. 18-32. Galen's views, including agnosticism and pagan views in which he acknowledges theological doubts, are dismissed in the middle ages as reasoning lacking logic.

<sup>408</sup>St. Augustine, *op. cit.* p. 147.

<sup>409</sup>According to Biller, there were four parts to the question: 1) a formally raised question; 2) arguments both pro and con; 3) a central determining response; and 4) replies to particular questions. This form of argumentation lasted until the middle of the 14<sup>th</sup> century. Peter Biller, "John of Naples, *Quodlibets and Medieval Theological Concern with the Body*", Peter Biller and A.J. Minnis (eds.), Rochester, University of York, 1997, p. 3-12.

<sup>410</sup>*Ibid.* p. 3-14.

<sup>411</sup>Danielle Jaquart, *op. cit.* Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 39-45. I have summarized the rules of condemnation in my own words.

<sup>412</sup>Seriously ill patients were positioned within sight of the sacrament on the altar and a patient's life in these hospitals was punctuated with monastic hours and exposure to the host. Generally hospitals were set up to treat acute but not life threatening cases, with the patient sent home after consultation. The long-term inhabitant would include the chronically sick and elderly, with the purpose being to provide shelter while they lived out their few days in minimum pain.

<sup>413</sup>Peregrine Hordon, "Religion as Medicine: music in medieval hospitals", Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 135-153.

<sup>414</sup>Phillip Cary, *op. cit.* p. 107-111. Allowing for the possibility that the soul must be free to turn away from God, Saint Augustine substituted for immortality the offer of free choice: that the mind's relationship to reason involved *the responsibility of the self* – one could say therefore that reason and self are tantamount to the same thing – in which only the *choice* of virtue constitutes a happy life. To be of good will is equal to being of good mind

<sup>415</sup>Richard Sennet, *op. cit.* p. 206-207 “Der Mitleidene Koerper”.

<sup>416</sup>Marion A. Habig (ed.), *op. cit.* p. 298-299. Thomas of Celano, Book One: “*The First Life of St. Francis*”, [...] He was of medium height, closer to shortness, his head was of moderate size and round, his face a bit long and prominent. His eyes were of moderate size, black and sound; his hair was black his eyebrows straight, his nose symmetrical, thin and straight; his ears were upright, but small; his temples smooth. His speech was peaceable, fiery and sharp; his voice was strong, sweet, clear and sonorous. His teeth were set close together even and white; his lips were small and thin; his beard black but not bushy. His neck was slender, his shoulders straight, his arms short, his hands slender, his fingers long, his nails extended; his legs were thin, his feet small. His skin was delicate his flesh very spare. He wore rough garments. He slept but very briefly. He gave most generously.

<sup>417</sup>Demons also lacked bodies and necessarily lacked gender. The thirteenth century scholastics concluded that while they seduced their victims, taking on the form of either male or female, they did not experience sexual pleasure. Dyan Elliot, *op. cit.* p. 53.

<sup>418</sup>“*In the fervor of his love he felt inspired to imitate the glorious victory of the martyrs in whom the fire [bodily heat] could not be extinguished or their courage broken of love.*” Bonaventure of Bagnoregio, “*Major Life of Saint Francis*”, Marion A. Habig (ed.), *op. cit.* p. 701.

<sup>419</sup>“There is only love, it is neither father's or mother's, but springs forth from the original father”. Anselm of Canterbury (1033-1109), *op. cit.* Brian Davies and G.R. Evans (eds.), Oxford, Oxford University Press, 1998, p. 62. See also Richard Sennet, *op. cit.* p. 213. Sennet makes reference to C.W. Bynum's *Jesus as Mother: studies in the spirituality of the high Middle Ages*, Berkeley, University of California, 1982, p. 110-125. Bynum writes that the heart, the symbol of love, was the substitution for the absence of the woman's zone of the body.

<sup>420</sup>Santa Croce and the Bardi Chapel embodied not only the authority and spiritual leadership of St. Francis, but they also embody the struggle between the Spirituals and the Conventuals who brought about the former's demise. And Giotto, sensitive to this, tones down the chromatic scale to a simpler, more appropriately subdued earthy material presence, while on the other hand he elaborates – but traces the same path – as the legends of Bonaventure. But Giotto never forgets that the focus has to be on the narrative giving an opportunity to the viewer for emotional release and empathy, and he therefore places the body of St. Francis laid out in state with the wounds facing the viewer just above eye level.

<sup>421</sup>Rona Goffen, *op. cit.* p. 68.

<sup>422</sup>Ziegler discusses the tree of life in relationship to Adam's body, which he expressed was heavy because it was composed of earth, and water. He later changed his mind, asserting that the heaviness in Adam's body was a matter of divine wisdom; if it were lightness, he rationalized, it would mean the predominance of heat, excess heat and the destruction of the body. The darkest and most earthy coloured fresco is the apparition of St. Francis. The lightness and brightness of Giotto's colours could be related to the idea of good vital health and complexion. Note the pinks, light blues and yellows in the Bardi Chapel frescoes. Joseph Ziegler, “*Medicine and Immortality in Terrestrial Paradise*”, Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 215-219.

<sup>423</sup>The incubus, a phantom presence, attacked a person in their sleep by sitting on their chests and giving them the feeling of suffocation, either arising from internal causes – corrupted humours blocking the circulation of spirits in the vital organs, the heart and the brain, or from external causes – a cooling of the head. The cure was to be woken up, with rubbing of the patient's feet, hands and head, and spraying water into their face and making them vomit. Maaïke van der Lugt, "The Incubus in Scholastic Debate", Peter Biller and Joseph Ziegler (eds.), *op. cit.* p. 175-193.

<sup>424</sup>Albertus Magnus, in *Parvulus philosophiae naturalis*, comments on the five cells as though the movement of information from one cell to another was determined by their wet or dry state. Sensus communis being wet, does not keep its content for long and therefore passes to the second cell, imagination, which is dry and therefore more able to preserve mental matter. The third cell, the organ of fantasy, is also dry, but the fourth is again moist and controls *estimative*; memory is the fifth cell, dry and well-suited for storage. Edwin Clarke and Kenneth Dewhurst, *op. cit.* p. 11, 31.

<sup>425</sup>Caroline A. Jones and Peter Galison (eds.), *op. cit.* p. 123-102. The only time that stigmata is mentioned in the Bible is in connection with Paul, who proclaims "I bear in my body the marks of Christ..." Galatians, 6:17 (see John Brown, Reverend, *The Self-Interpreting Bible*). Paul, speaking out against the superficiality of the wounds of circumcision, states earlier in 6:14: "But God forbid that I should glory save in the cross of our Lord Jesus Christ by whom the world is crucified unto me and I unto the world". St. Peter was also the patron Saint of St. Francis.

<sup>426</sup>Rona Goffen, *op. cit.* p. 70-71. This image of St. Francis at Arles, with his hands raised showing his wounds, resembles other images of the Saint displaying his stigmata.

<sup>427</sup>Anselm of Canterbury (1033-1109), *op. cit.* p. xii. This comes straight out of the platonic notion of the nature of an idea or an archetype: that which is thought in mind is more real than that which is concrete and measurable.

<sup>428</sup>Bruce Cole, "Another Look at Giotto's Stigmatization of St. Francis", Andrew Ladis (ed.), *Giotto and the World of Early Italian Art*, p. 125.

<sup>429</sup>*Encyclopedia Britannica*, *op. cit.* Volume 7, p. 396, col 2.

<sup>430</sup>Bruce Cole, "Another Look at Giotto's Stigmatization of St. Francis", Andrew Ladis (ed.), *op. cit.* p. 129.

<sup>431</sup>Rona Goffen, *op. cit.* p. 62-63. Francis kneels in a position almost frontal to the picture plane different from the profile in the Assisi and Louvre panels. At the stigmatic reception on the Feast of the Exaltation of the Holy Cross, "Francis was dumbfounded at the sight", and Giotto conveys this by an active gesture and his facial expression.

<sup>432</sup>Thomas of Celano, "The Life of St. Francis", Regis J. Armstrong and collaborators (eds.), *op. cit.* Vol. I, Chapter IV, p. 266-267. "During this period [he was having trouble with his eyes] St. Francis became afflicted with different kinds of illnesses, and more severe than usual. Since he had over many years chastized his body and brought it into subjection, he suffered infirmities often. During the past eighteen years his flesh rarely had any rest, as he traveled through many different regions; ... repeated submissions became spontaneous, as the flesh yielded each day, reached a place of great virtue, for habit often becomes nature."

<sup>433</sup>Marion A. Habig (ed.), *St. Francis of Assisi: writings and early biographies*, Raphael Brown, Bennan Fahy, Placid Herman (trans.), Chicago, Franciscan Herald Press, 1973, p. 849 (Bonaventure, excerpts 23, 24, 25) St. Francis wept so much that his doctors told him that he would have to stop, if he did not want to go blind. Eventually he did go blind, due to this constant weeping (1 Sermo de S. Maria Magdalena, Opera, IX, 557a)

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**End notes      Chapter III**

<sup>1</sup>The present Orangerie is relatively recent.

<sup>2</sup>Because the park became a site in which fountains, a maze, a grotto, sculptures and terra cotta figurines lend a tone of elegance – and in which even a silkworm farm was cultivated – it became a fashionable “*airing place*” for the aristocracy. For the first time, fashion and elegance – formerly displayed only indoors – came out into the open air.

<sup>3</sup>David Harvey, *Paris, Capital of Modernity*, New York, Routledge, 2003, p. 3-4, 11-113.

<sup>4</sup>*Ibid.* p. 325-331. See also *Encyclopedia Britannica*, Chicago, University of Chicago Press, 1950, Vol, 17, p. 289, col. A.

<sup>5</sup>There were other earlier “*hothouses*” in different locations in the Tuileries.

<sup>6</sup>John Dixon Hunt and Peter Willis, *The Geneous of Place*, Cambridge, Mass., MIT Press, 1988, p. 100-105. Timothy Nourse d. 1699.

<sup>7</sup>*Ibid.* p. 177. Béat Louis de Muralt, 1665-1749.

<sup>8</sup>In this translation from Roger Marx, ‘still water’ was originally translated as ‘stagnant water’ – which has more the feeling of doom and death than of refreshing tranquility. Therefore I substituted ‘still’ for stagnant.

<sup>9</sup>Michael Hoog, *The Nymphéas of Claude Monet*, Paris, Reunion des Musés Nationaux, 1990, p. 93-94. See also Roger Marx, *Gazette des Beaux-Arts*, June 1, 1909.

<sup>10</sup>William C. Seitz, *Claude Monet: seasons and moments*, New York, Museum of Modern Art, 1960, p. 46. By 1917 the plan, in its first phase, was well under way, and at Giverny in November – possibly the 18<sup>th</sup>, the day allied troops entered Strasbourg – Clemenceau accepted Monet’s commemorative gift to the state of a group of water landscapes. See Louis Gillet, *Trois Variations sur Claude Monet*, Paris, Plon, 1927, p. 77-78.

<sup>11</sup>*Ibid.* p. 46. Monet’s enthusiasm was further strengthened when a lady admirer wrote him suggesting “*A room almost round that you would decorate and that would be encircled by a beautiful horizon of water*”.

<sup>12</sup>Duc de Trévisé, “Pilgrimage to Giverny”, *La Revue de l’art Ancien et Modern*, January/February 1928, Charles F. Stuckey (ed.), *Monet: a retrospective*, Paris, Beaux Arts Editions, 1985, p. 340.

<sup>13</sup>Gerald Needham, *Nineteenth Century Realist Art*, New York, Harper and Row, 1988, p. 70-71. Delacroix’s *Liberty Leading the People*, for example.

<sup>14</sup>*Ibid.* p. 71. It was the tradition of the academies in France to send students to Italy to study landscape painting. For example, young Corot studied landscape painting in Italy. The group of painters that were associated with the Barbizon school included Théodore Rousseau, Narcisse Diaz, Jules Dupré, Charles Jacques and Corot.

<sup>15</sup>Virginia Spate, *Claude Monet: the colour of time*, London, Thames & Hudson, 1992, p. 15. The Landscape painter Eugène Boudin met Monet as early as 1856. Their work was shown with that of Millet and Troyon in the window of a picture-framer's shop in Le Havre when Monet was still making caricatures. It was Boudin who introduced him to painting *en plein air*.

<sup>16</sup>Claude Monet, *Monet by Monet*, Rachel Barnes (ed.), New York, Knopf, 1990, p. 20. See also Carla Rachman, *Monet*, London, Phaidon, 1997, p. 336. Monet comes back from Algeria in 1862, where he was enlisted and suffered a bout of typhoid. He went to convalesce in Le Havre and there works with Boudin and the Dutch artist Jonkind, practicing *plein air* painting.

<sup>17</sup>William C. Seitz, *op. cit.* p. 4.

<sup>18</sup>Charles F. Stuckey (ed.), *Monet: a retrospective*, p. 338. This anecdote, in which Monet tells of introducing Manet and others to *plein air* painting, was reported by the Duc de Trévise in "*Pilgrimage to Giverny*".

<sup>19</sup>Claude Monet, *op. cit.* p. 48.

<sup>20</sup>Virginia Spate, *Claude Monet: the colour of time*, p. 43. She also writes about the influence of Japanese prints and the process of woodblock printing. Their scenes of street-life in Yokohama and Kyoto confirmed the consciousness developing at the time of different visual codes belonging to different cultures. Monet adopted some of these codes and visual equivalences to his own observations, which were particularly sensitive to the subtle shifts in luminosity to be seen in Japanese prints. The Universal Exhibition of 1867 in Paris, with ten million visitors from all over the world, introduced the public on a large scale to modern technology and the aura of modernity. The idea of progress exerted an influence in unprecedented ways – and the very word itself came to stand for looking forward and ignoring the lessons or attributes of history and the Past.

<sup>21</sup>David Harvey, *op. cit.* p. 245-266. This book examines how during the Second Empire the medieval city of Paris was transformed by the ideologies of Modernity.

<sup>22</sup>Claude Monet, *op. cit.* p. 8. It was this obsession that led him to brave appalling weather conditions in order to record light and atmosphere as faithfully as possible. Monet was always seeking to record the spectacle of the visual *natural* event – with all of its fluctuating nuances.

<sup>23</sup>*Ibid.* p. 8.

<sup>24</sup>Giotto's Bardi Chapel, on the other hand, became a physical demonstration of the embodiment of metaphysical aspirations.

<sup>25</sup>See Jonathan Crary, *Techniques of the Observer: on vision and modernity in the nineteenth century*, Cambridge, Mass., MIT Press, 1990, and his: *Suspension of Perception: attention, spectacle, and modern culture*, Cambridge Mass., MIT Press, 2001.

<sup>26</sup>Arthur Rimbaud, *Rimbaud Complete*, Edward Hirsh (trans.), New York, The Modern Library, 2003, p. 269. The sense of movement of this period can be gleaned from Rimbaud's poem titled *Movement*, which refers to traditional as well as new forms of movement: "The wagging movement along the banks of the river's falls, / The gulf at stern, / The slope's speed, / The current's pull, / Flows through unimaginable lights / And new elements / Travelers enveloped in a valley of waterspouts / And strom." Here, 'strom' refers to electricity.

<sup>27</sup>Virginia Spate, *Claude Monet: the colour of time*, p. 303. Baudelaire wrote the year Monet arrived in Paris that the illusions imposed on him by "brutal and enormous magic of theatre scenery or dioramas the visible artifice and illusion" existed only in time, and only – as Spate writes – "install themselves gradually on the consciousness of the visitor, who forgetting all, ceases to be the visitor and becomes the creator of this enclosing world."

<sup>28</sup>Claude Monet, *op. cit.* p. 39. See also D. Wildenstein, *Catalogue Raisonné*.

<sup>29</sup>*Ibid.* p. 50. "Letter to Geffroy", 1890.

<sup>30</sup>*Ibid.* p. 54. "Letter to Geffroy", Rouen, March 1893, while painting the Rouen Cathedral.

<sup>31</sup>For an amusing reflection on this, see Nicholas Baker, *The Size of Thoughts: essays and other lumber*, London, Random House Vintage, 1997, p. 10- 17.

<sup>32</sup>Phillip L. Boardman, *Patrick Geddes and his Many Worlds*, Edinburgh, The Outlook Tower, 1972, p. 4-6. See also his "Seeing the Woods and the Trees", *Architectural Journal*, July/August 1987, p. 186.

<sup>33</sup>David Harvey, *op. cit.* p. 80-81.

<sup>34</sup>Eric Hobsbawm, *The Age of Capital, 1848 – 1875*, London, Abacus, 2001, p. 21.

<sup>35</sup>David Harvey, *op. cit.* p. 12. Houseman insisted that there be 440 feet between the facing buildings, with the avenue 360 feet wide, thus tripling the scale of the project. "He changed the scale of both thought and action".

<sup>36</sup>Arnold Hauser, *The Social History of Art*, London, Routledge & Kegan Paul, 1974, p. 7. The deepest antitheses that contributed to the climate that fueled the 1848 revolution lay between industrial capitalism, on the one side, and the wage-earning workers with the petit-bourgeoisie on the other. But despite constant reversals, liberalism prepared the ground for democracy.

<sup>37</sup>Eric Hobsbawm, *op. cit.* p. 23-24. "The social and economic structure and politics divided the revolutionary zone into two parts whose extremes seemed to have little in common. Their social structure differed fundamentally, except for the substantial and pretty universal prevalence of countrymen over townsmen, of small towns over big cities. The problem was that the urban population was disproportionately prominent in politics. In the west, peasants were legally free and large estates were relatively unimportant; in the east on the other hand peasants were still serfs and landowners were highly concentrated in the hands of the nobility. In the west the middle class meant bankers, merchants, capitalist entrepreneurs, and those practicing liberal professions. In the east it was the educated group and the business-minded sector and minor nobles that made up the middle class, a sector of the population that was surprisingly large."

<sup>38</sup>David Harvey, *op. cit.* p. 99.

<sup>39</sup>*Ibid.* p. 9.

<sup>40</sup>*Ibid.* p. 89, 127-129. Chapter: *Rent and property*.

<sup>41</sup>Paul Hayes Tucker, *Claude Monet: Life and Art*, New Haven, Yale University Press, 1995, p. 70. Claude Monet, like Gustave Caillebotte, celebrated the urban expansion into the countryside. Both painted landscapes that showed the urban sprawl of new housing – for example Monet's *Houses at the Edge of the Field*, 1873. This painting is as significant for the urbanization it reveals as for the abundance of the fresh clean atmosphere filled with light, and Monet's bold palette, writes Tucker. It was a celebration of this progressive *petite ville*.

<sup>42</sup>Claude Monet, *op. cit.* p. 337-339. It is in London that Charles-Francoise Daubigny introduces Monet to Paul Durand-Ruel who became his first dealer and included eighteen pictures of Monet in April 1876. It was also at this time that Alice Hoschedé and her husband invited the Monet's family to their château at Montgeron and commissioned him to paint four decorative panels of the estate for the dining room. It was also the following year that Hoschedé declared bankruptcy. In 1878, after the birth of his second son Michel and because of a severe lack of money – and with Camille gravely ill – that the Monet's and Hoschedés set up joint household in Ventimille until December 1881. Camille having died in September of 1879, at the end of 1881 Monet moved with Alice Hoschedé and eight children to Poissy. It is in 1883 that Monet moves with both families to their last home – the Pressoir in Giverny – where he first paints the garden pictures. It is not until 1900 that he exhibits his first Giverny garden pictures. These Garden paintings are shown at Durand-Ruel for the first time and in 1903 Monet begins the second series of Giverny garden painting, concentrating this time on the lily pond.

<sup>43</sup>Claude Monet, *op. cit.* p. 66. The letter from Giverny is dated 1907.

<sup>44</sup>Duc de Trévisse, *op. cit.*, Charles F. Stuckey (ed.), *op. cit.*, p. 338. "A far away Lady, a foreigner, an Italian[...] I was told about this bit of Telepathy: just as Monet was having serious doubts about his powers, an unexpected correspondent had specified unknowingly, the project dear to the artist's heart.[...] the description went on and contributed to breaking down the painter's last, lingering doubts. It was not without some emotion that he later showed her the realization of her wish."

<sup>45</sup>Pliny the Elder, *Natural History*, John F. Healy (trans.), London, Penguin, 1991, book XXXV, 116, p. 335. "...*Spurius Tadius was the first to introduce the extremely attractive feature of painting room walls with representations of country houses, porticoes, landscaped gardens, groves, woods, hills...*"

<sup>46</sup>Mortimer Wheeler, *Roman Art and Architecture*, London, Thames & Hudson, 1996, p. 185. Livia's garden has been reconstructed at the Museo della Terme in Rome.

<sup>47</sup>Thomas McEvelley, *Exile's Return: towards a redefinition of painting for the post-modern era*, Cambridge, Cambridge University Press, 1993, p. 18.

<sup>48</sup>Claude Monet, *op. cit.* p. 8.

<sup>49</sup>Roland Barthes, "From Work to Text", Brian Wallis (ed.), *Art After Modernism*, New York, The New Museum of Modern Art, 1991, p. 172.

<sup>50</sup>Inge Crosman Wimmers, *Proust and Emotion: the importance of affect in A la recherche du temps perdu*, Toronto, University of Toronto Press, 2003, p. 173. Roland Barthes' writing on the literary form that Proust invented, suggests that Proust invented the 'third form': *A la Recherche*, he asks, is it a novel, an essay – or neither? Is it both at the same time? Is it fiction, autobiography or both?

<sup>51</sup>Steven Z. Levine, *Monet, Narcissus, and Self-Reflection: the modernist myth of the self*, Chicago, University of Chicago Press, 1994, p. 127: the promised gift to Mallarmé. Mallarmé, writing to Monet on 21 July, 1890, in *Correspondance*, 4: 123-124 “*One does not disturb a man in the midst of a joy like that caused in me by the contemplation of your picture, dear Monet. I am drowning in the bedazzlement, and esteem my spiritual health in the fact that I see it more or less, according to my hours. I slept little last night looking at it*”; According to Geoffroy, Mallarmé compared the glimpsed landscape with its delicious precision – a meander of river, an arabesque of water across a country side – to the smile of the *Mona Lisa*.

<sup>52</sup>John House, *Monet: Nature into Art*, New Haven, Yale University Press, 1986, p. 13.

<sup>53</sup>Paul Verlaine, *The Jinx*, Chase Madar (ed. & trans.), *The Cursed Poets*, Los Angeles, Green Interger, 2003, p. 71-72, 15, 53.

<sup>54</sup>Steven Z. Levine, *Monet, Narcissus, and Self-Reflection*, p. xiii.

<sup>55</sup>*Ibid.* p. xiii.

<sup>56</sup>Barbara G. Walker, *The Woman's Encyclopedia of Myths and Secrets*, San Francisco, Harper and Row, 1983, p. 269, 718. Echo and Narcissus, caught by the Titans with a magic mirror, was the Greek Flower God who died looking at his own reflection in the pool of the nymph Echo. See also Pierre Grimal, *The Dictionary of Classical Mythology*, A.R. Maxwell-Hyslop (trans.), Oxford, Blackwell Reference, 1987, p. 139. Narcissus was also Dionysus, the twice born god.

<sup>57</sup>Steven Z. Levine, *Monet, Narcissus, and Self-Reflection*, p. 127. letter to Geoffroy (22 June 1890 L. 1060)

<sup>58</sup>*Ibid.* p. 129, chapter 10 note 15. See also Mallarmé, *Le Nénuphar blanc* in his *Oeuvres*, p 284: “...the nature of a person who has chosen for herself a retreat so damply impenetrable not being other than in conformity with my taste. Surely, she had made this crystal her interior mirror sheltered from the glaring indiscretion of the afternoon; she came here and the breath of silver glazing the willows was soon none other than the limpidity of her gaze grown accustomed to each leaf...”

<sup>59</sup>Ovid, *Metamorphoses*, A.D. Melville (trans.), Oxford, Oxford University Press, 1987, Book III extracts from Narcissus and Echo line 374 – 514, p. 61-66.

<sup>60</sup>Claude Monet, *op. cit.* p. 17. Monet wrote this in 1924 at the end of his life.

<sup>61</sup>Steven Z. Levine, *Monet and His Critics*, New York, Garland, 1976, p. 301. See also Louis de Forcaude, *Les Nymphéas de Claude Monet*, Paris, Le Gauloise, 22 May 1909, quoted in Geoffroy, II, p. 144-145.

<sup>62</sup>*Ibid.* p. 302.



<sup>63</sup>Arnold Hauser, *op. cit.* Vol. 4, p. 2-4. Three generations from Stendhal to Proust struggle with the self possessed reflective power of the emancipated middle class of a bourgeoisie that had adopted the aristocracy's administrative structure and whose methodology was tested by the July revolution in which the interests of the working class fused with bourgeois aspirations. The progress of exact sciences, philosophical scientism and political realism fought against romanticism. The artistic outlook is partially bourgeois, partly socialistic, and unromantic: the age of romantic poetry is gone and the naturalistic novel answers to the unromantic view of life of the following generations with social realism and socio-psychological mechanisms in an effort – as Hauser writes – to secure some sense of control over society. This opened up a class consciousness that made room for socialist theories with respect to which the artistic program of art for art's sake – *L'art pour l'art* – existed outside of the utilitarianism of both social and bourgeois art.

<sup>64</sup>Inge Crosman Wimmers, *op. cit.* p. 3-4 and footnote 4, p. 185.

<sup>65</sup>Marcel Proust, *Finding Time Again, / Le Temps Retrouvé*, Ian Patterson (trans.), London, Penguin Books, 2003, p. 92.

<sup>66</sup>*Ibid.* p. 24-25, 37-38, 92. "Just as a geometrician, stripping things of their physical qualities, sees only their linear substratum, so what people said escaped me, because what interested me was not what they wanted to say, but the manner in which they said it, in so far as this revealed their character or their absurdities". See also Inge Crosman Wimmers, *op. cit.* p. 6-7. Martha Nussbaum, like other cognitive philosophers, believes that emotions are an integral part of human perception and cognition, hence an essential part of intelligence involving judgments or evaluative propositions determining our ways of being in the world. The search for identity is the central theme of Proust's novel, *A la Recherche...*, and the Proustian narrator is fully aware of the existence of the 'unthought known' and the importance of the descent into the deepest layers of the self as he formulates his poetics in *Le Temps Retrouvé*. See Charles F. Stuckey (ed.), *op. cit.* p. 250. Marcel Proust, in "Splendors", writes about the Nymphéas project for Le Figaro, June 15, 1907: "It was planted so that only the blooms with matching colours would flower at the same time. This clearly manifests painterly intent... The garden itself is a real transposition of art."

<sup>67</sup>Denis Rouart and Jean-Dominique Rey, *Nymphéas: ou les miroirs du temps*, Paris, Fernand Hazan, 1972, p. 55.

<sup>68</sup>Carla Rachman, *op. cit.* p. 282. Vivian Russell has suggested that the idea for the 38 paint box beds came to Monet while he was painting the tulip fields on his visit to Holland in 1886.

<sup>69</sup>Daniel Wildenstein, *Monet's Years at Giverny: beyond impressionism*, New York, Abrams and the Metropolitan Museum of Art, 1978, p. 25.

<sup>70</sup>*Ibid.* p. 15-40.

<sup>71</sup>Steven Z. Levine, *Monet and His Critics*, p. 360-361. From 1914 on it was known that Monet was working on the Orangerie installation. However, it was not until 1920 that the project itself became widely known through one of the most vocal supporters of Monet, the critic Thiebault Sisson, who mentioned it in a major article on Monet summarizing his career and introducing the *Nymphéas* project.

<sup>72</sup>Charles F. Stuckey, "Blossoms and Blunders: Monet and the State II", *Art in America*, September 1979, p. 109-112. The effect that the failure of the first project had was significant in Monet's approach to securing for the Orangerie very firm conditions. Not only was the state protected, but even more so Monet's intentions could now not be compromised in any way – now and forever. While the failure of the first project was a great disappointment, the new project opened up for him yet another possibility of rethinking and elaborating the initial conception. As I will demonstrate, the overall conception is closer to his initial ideas than the Biron project was able to accomplish. For the art historians and critics, on the other hand, this dramatic change of venues left great doubt that the integrity of the original project's intention was maintained and has gathered suspicions of a "compromise" – a word that was not very familiar to Monet's vocabulary.

<sup>73</sup>Steven Z. Levine, *Monet and His Critics*, New York, Garland, 1976, p. 360-418. Despite advancing years and periodic eye trouble, which started around 1916, Monet approached this new challenge with as much vigor as dismay or doubt. This, however, does not constitute compromise of his realization – even if he recycled some of the panels from the Biron project. The long and complex history underlying the major changes that had to be accommodated by Monet are at the root of much confusion about the integrity of the conception, and to what extent it was based on Monet's original intentions. It has been concluded that some panels that were part of the original Hotel Biron installation have been recycled or reworked for the Orangerie installation, while others have been left out altogether. Historians and critics believe that the Orangerie installation fails at demonstrating an internal logic that would have been present in the original circular installation, which no one – it should be remembered – saw in its completion, and in this way such criticism promotes the belief that the panels are ultimately unrelated to each other. The fragmentary nature of the documentation surrounding the production of both the first and second installation has not made this evaluation any easier.

<sup>74</sup>*Ibid.* p. 367. Two young dealers Bernheim and Gimpel visited Monet and Bernheim tried to buy one of the Nymphéas panels that Monet was working on. Monet replied that it was impossible since each panel was necessary to make the next. Gimpel understood that seeing a single panel would give an incomplete comprehension. (28 Nov. 1918, p. 89)

<sup>75</sup>Robert Gordon and Andrew Forge, *Monet*, New York, Abrams, 1983, p. 232-239.

<sup>76</sup>Paul Hayes Tucker, *op. cit.* p. 216-218.

<sup>77</sup>*Ibid.* p. 217. See also Michael Hoog, *op. cit.* p. 38. In *Le Gaulois*, Oct. 16 1920, Jean Villmer noted: "He wants a special pavilion in the garden of the Hotel de Biron, a circular room in which his canvases will be placed standing on the floor itself, in an uninterrupted series, such that the spectator in the middle of the room will think that he is on the island of the Japanese Pond and will see all around him what he would see in the garden at Giverny".

<sup>78</sup>Robert Gordon and Andrew Forge, *op. cit.* p. 239. The first drawing is close to the final realization of the Orangerie, while the drawing of March 7<sup>th</sup> of the same year has both rooms in very different proportions, and with only one entrance between the two rooms as opposed to the present two, which indicate a sense of entering and exit.

<sup>79</sup>Charles F. Stuckey, "Blossoms and Blunders: Monet and the State II", p. 113

<sup>80</sup>Virginia Spate, *Claude Monet*, p. 280-281. Monet frequently and up until shortly before his death made many rehearsals for visitors by having the paintings placed around his large studio, giving the visitors a sense of what was to come.

<sup>81</sup>Charles F. Stuckey, "*Blossoms and Blunders: Monet and the State II*", p. 120. Photographs from Monet's studio of 1924 give no clear indication as to the discrepancies in the panels for the second room, ultimately installed from those specified in the original contract. It is assumed therefore that he was dramatically making major changes.

<sup>82</sup>Steven Z. Levine, *Monet and His Critics*, p 365 – p 367. While Monet had obviously begun by this time to rationalize the round room in its totality, there is no reason to believe that the titles given for the round room in the 1920 plan provide a clue as to his intentions. There were contradictory eye witness accounts of the work in progress, While the critic Roger Marx, on visiting Monet's studio in 1918, felt disorientated by the fragmentary nature of the installation, the art dealer Rene Gimpel on another occasion was moved by the *unity of the ensemble*. The variety of the titles or subjects described in the 1922 contract for the Orangerie gave Monet a wide range of options, since he insisted on the privilege of reworking his paintings and even destroying paintings he wasn't happy with. The Orangerie required a complete rethinking of the conception of the installation. Now there were two rooms and not one, they were oval not circular, and with considerably more wall space.

<sup>83</sup>Michael Hoog, *op. cit.* p.113-115. "*Official Documents affecting the Donation by Claude Monet to the French State. However, Mr. Claude Monet reserves the exclusive right to make modifications or changes he deems necessary, up to the date at which the physical transfer of the donated panels will take place.*"

<sup>84</sup>Michael Petersen and Emmanuel Cocq-Hougaard, *Jardin Virtuel de Monet*, Paris, Musée Marmatton, 1997. (CD ROM)

<sup>85</sup>Robert Gordon and Charles F. Stuckey, "*Blossoms and Blunders: Monet and the State*", *Art In America*, January/ February 1979, p. 106.

<sup>86</sup>Paul Hayes Tucker, *Claude Monet: life and art*, p. 218.

<sup>87</sup>Denis Rouart and Jean-Dominique Rey, *op. cit.* p. 183-184, 152-192. Note a catalogue raisonné by Robert Maillard.

<sup>88</sup>Robert Gordon and Charles F. Stuckey, "*Blossoms and Blunders*", *Art In America*, January/February 1979, p. 112. Here is reproduced the three panels of the agapanthus triptych now lost from March 1921, showing their finished version – probably separated as individual panels.

<sup>89</sup>Michael Hoog, *op. cit.* p. 113-115. Note that the four panels of the original *Three Willows* becomes a three panel *Clear Morning with Willows*, and the remaining panel becomes part of *Morning with Willows*.

<sup>90</sup>Jack Lindsay, *Cezanne: his life and art*, New York, Graphic Society, 1969, p. 251.

<sup>91</sup>Semir Zeki, *Inner Vision: an exploration of art and the brain*, Oxford, Oxford University Press, 1999, p. 209.

<sup>92</sup>John Ruskin, *On Art and Life*, London, Penguin Books, 2004, p. 14. First published in two volumes in 1853.

<sup>93</sup>Charles Harrison, Paul Wood, Jason Geiger (eds.), *Art in Theory 1815-1900: an anthology of changing ideas*, Oxford, Blackwell, 1998, p. 204-209: John Ruskin, (1819-1900) from the preface of the second edition of *Modern Painters*.

<sup>94</sup>John Rewald and Frances Weitzenhoffer, (eds.) *Aspects of Monet*, New York, Abrams 1984, p. 108. See also Charles F. Stuckey, *Monet's art and the act of vision*: quote is from *John Ruskin, Complete Works*, E. T. Cook and Alexander Wedderburn (eds.), London, 1904, XV, p. 27. (Footnote 4)

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<sup>95</sup>Charles Harrison, Paul Wood, Jason Geiger (eds.), *op. cit.* p. 204: John Ruskin, (1819-1900) *Modern Painters*, Vol. I.

<sup>96</sup>Patricia Smith Churchland, *Neurophilosophy: toward a unified science of the mind-brain*, Cambridge, Mass., MIT Press, 1995, p. 454.

<sup>97</sup>*Ibid.* p. 452-453.

<sup>98</sup>*Ibid.* p. 452-453.

<sup>99</sup>Jeffrey M. Schwartz and Sharon Begley, *The Mind and the Brain: neuroplasticity and the power of mental force*, New York, Harper Collins, 2003, p. 101, 127, 199.

<sup>100</sup>Sheena Rogers, "Perceiving Pictorial Space", William Epstein and Sheena Rogers (eds.), *Perception of Space and Motion*, New York, Academic Press, 1995, p. 125-127.

<sup>101</sup>John Campbell, *Past, Space, and Self*, Cambridge, Mass., MIT Press, p. 8-16.

<sup>102</sup>*Ibid.* p. 5-19.

<sup>103</sup>Henry Montgomery, "Towards a Perspective Theory of Decision Making", *Acta Psychologica*, 87, 1994, p. 155-178.

<sup>104</sup>Kirk A. Ludwig, "Explaining Why Things Look The Way They Do", Kathleen Aikins (ed.), *Perception*, New York, Oxford University Press, 1996, p. 23.

<sup>105</sup>Sheena Rogers, *op. cit.*, William Epstein, Sheena Rogers, (eds.) *op. cit.* p. 119.

<sup>106</sup>Patricia Smith Churchland, *op. cit.* p. 420-421, 452-458.

<sup>107</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, Cambridge, Cambridge University Press, 1986, p. 66-70, 98-99.

<sup>108</sup>*Ibid.* p. 15, 33.

<sup>109</sup>Patrick Maynard, "Perspective Places", *The Journal of Aesthetics and Art Criticism*, 54:1 Winter, 1996, p. 21-40, p. 23.

<sup>110</sup>Margaret A. Hagen, *op. cit.* p. 98-105.

<sup>111</sup>*Ibid.* p. 274-284.

<sup>112</sup>Rita E. Anderson, "Imagery and Spatial Representation," William Bechtel and George Graham (eds.), *Companion to Cognitive Science*, Oxford, Blackwell, 1999, p. 204-211, 205.

<sup>113</sup>Margaret A. Hagen, *op. cit.* p. 55.

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- <sup>114</sup>Barbara Gillam, "The Perception of Spatial Layout from Static Optical Information", William Epstein and Sheena Rogers (eds.), *op. cit.* p. 27.
- <sup>115</sup>Rita E. Anderson, *op. cit.* William Bechtel and George Graham (eds.), *op. cit.* p. 206-207.
- <sup>116</sup>R.H.Cuijpers, Amil. Kappers, and J.J. Koenderink, "Investigation of Visual Space using an Exocentric Pointing Task," *Perception and Psychophysics*, Vol. 62, No. 8, November 2000, p. 1556-1571.
- <sup>117</sup>Margaret A. Hagen (ed.), *The Perception of Pictures: Alberti's Window, the projective model of pictorial information*, New York, Academic Press, 1980, vol. I, p. 27.
- <sup>118</sup>Sheena Rogers, *op. cit.*, William Epstein and Sheena Rogers (eds.) *op. cit.*, p. 129-130.
- <sup>119</sup>R.H.Cuijpers, Amil. Kappers, and J.J. Koenderink, *op. cit.* p. 1567.
- <sup>120</sup>Sheena Rogers, *op. cit.*, William Epstein and Sheena Rogers (eds.) *op. cit.*, p. 120.
- <sup>121</sup>Kirk A. Ludwig, *op. cit.*, Kathleen Aikins (ed.) *op. cit.*, p. 23.
- <sup>122</sup>Sheena Rogers, *op. cit.*, William Epstein and Sheena Rogers (eds.) *op. cit.*, p. 123-125.
- <sup>123</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 318.
- <sup>124</sup>Kirk A. Ludwig, *op. cit.* Kathleen Aikins (ed.), *op. cit.* p. 23-27.
- <sup>125</sup>Joseph Margolis, "Prospects for a Science of Aesthetic Perception", John Fisher (ed.), *Perceived Art Works*, Philadelphia, Temple University Press, 1992, p. 213-229, 209.
- <sup>126</sup>Daniel C. Dennett, "Seeing is Believing", Kathleen Aikins (ed.), *op. cit.* p. 158-172. While Dennett's hypothesis rests on the action in the deep brain filling in the belief, Patricia Churchland suggests that for the time being we should accept sensory experiences and, I add, imagined ones, to be real states of the brain whose neurobiological properties will be discovered as more research gets done.
- <sup>127</sup>Ronald G. Boothe, *Perception of the Environment*, New York, Springer, 2002, p. 307-325.
- <sup>128</sup>Clive Cazeaux, "Synaesthesia and Epistemology in Abstract Painting", *British Journal of Aesthetics*, Vol. 39, No. 3, July, 1999, p. 241-251, 242.
- <sup>129</sup>Ronald G. Boothe, *op. cit.* p. 327.
- <sup>130</sup>Oliver Braddick, "The Many Faces of Motion Perception", Richard Gregory, John Harris, Priscilla Heard, David Rose, (eds.) *The Artful Eye*. Oxford, Oxford University Press, 1995, p. 205-217.
- <sup>131</sup>Daniel C. Dennett, *Consciousness Explained*, Boston, Little, Brown, 1991, p. 344-353.
- <sup>132</sup>Oliver Braddick, *op. cit.* p. 205-217.

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<sup>133</sup>Anthony Hayes and John Ross, "Lines of Sight", Richard Gregory and collaborators (eds.), *op. cit.* p. 337-351, 343, 347.

<sup>134</sup>*Ibid.* p. 343.

<sup>135</sup>V.S. Ramachandran, "2D or not 2D – that is the Question", Richard Gregory and collaborators (eds.) *op. cit.* p. 249-263. While it is true that there is also a certain amount of shading, how textures against textures create a kind of relief in three dimensions also helps the illusion of volume. Because there are so many layered events of texture and line and mass, it is only by speculation that this elusive quality of the rooms – filled with palpable light and colour energy – has given some insight to the perceptual explanation of this event.

<sup>136</sup>James Elkin, *What Painting Is*, New York, Routledge, 2000, p. 16-17

<sup>137</sup>David Phillips, "How Do Forgeries Deceive Art Critics?", Richard Gregory and collaborators, *op. cit.* p. 373-388.

<sup>138</sup>Semir Zeki, *op. cit.* p. 209-215.

<sup>139</sup>David Dobbs, "A Revealing Reflection", *Mind: Scientific American*, April/May 2006, p. 22-27.

<sup>140</sup>Sidney J. Blatt and Ethel S. Blatt, *Continuity and Change in Art: the development of modes of representation*, Hillsdale, New Jersey, Lawrence Erlbaum, 1984, p. 291-303.

<sup>141</sup>Susanne K. Langer, *Mind: an essay on human feelings*, Baltimore, The John Hopkins Press, 1967, Vol. I, p. 15.

<sup>142</sup>Margaret A. Hagen, *Varieties of Realism: geometries of representational art*, p. 231.

<sup>143</sup>Susanne K. Langer, *op. cit.* Vol. I, p. 89-90.

<sup>144</sup>Antonio Damasio, *The Feeling of What Happens: body and emotion in the making of consciousness*, New York, Harcourt Brace, 1999, p. 56-57. Damasio writes: "The classes of stimuli that cause happiness or fear or sadness tend to do so fairly consistently in the same individual and in individuals who share the same social and cultural background. [...] there is a rough correspondence between classes of emotion inducers and the resulting emotional state. [...] when I talk about ranges of stimuli that constitute inducers for certain classes of emotion [...] I am allowing for a considerable variation in the type of stimuli that can induce an emotion – both across individuals and across cultures [...] In all probability, development and culture superimpose the following influences on the preset devices first, they shape what constitutes an adequate inducer of a given emotion; second, they shape some aspects of the expression of emotion; and third, they shape the cognition and behaviour which follows the development of an emotion."

<sup>145</sup>Jean-Jacques Rousseau, *The Social Contract*, Maurice Cranstan (trans.), Harmondsworth, Middlesex, Penguin Classics, 1978, p. 49.

<sup>146</sup>Jean-Jacques Rousseau, *The Social Contract and Discourse on the Origin of Inequality*, Lester G. Crocker (ed.), New York, Washington Square Press, 1967, p. 17-18, 177. Also see: Andrew Fiala, *The Philosophers Voice: philosophy, politics and language of the nineteenth century*, New York, State University of New York Press, 2002, p. 37. Lock already stated that the people possess the right and the power to judge, to dissolve and to reconstitute the government. Kant isn't ready to give over the leadership to the people because he believes they lack judgment, but is hopeful that with good direction they can become rational.

<sup>147</sup>George H. Mead, *Movement of Thought in the Nineteenth Century*, Chicago, University of Chicago Press, 1972, p. 418.

<sup>148</sup>George Boas, *French Philosophies of the Romantic Period*, New York, Russell & Russell, 1964, p. 49-50. In a passage from *Professions de Foi*, Rousseau writes: "to perceive is to feel; to compare is to judge; to judge and feel are not the same thing. By sensations objects are given to me separate, isolates as in nature; by comparison I move them, I transport them [...] I put them one upon another to pronounce on their difference, their likeness and in general upon their relations. [...] the word is which pronounces judgment [...] this passive being will feel each object separately [...] Comparative ideas-greater and less are not sensations."

<sup>149</sup>Jean-Jacques Rousseau, *The Social Contract and Discourse on the Origin of Inequality*, p. 177-178.

<sup>150</sup>George H. Mead, *op. cit.* p. 420-425.

<sup>151</sup>Richard Tamas, *The Passion of the Western Mind*, New York, Harmony Books, 1991, p. 309.

<sup>152</sup>Amy M. Schmitter, "Descartes and the Primacy of Practice: the role of the passion in the search for truth", *Philosophical Studies*, Netherlands, Kluwer Academic Publishing, 2002, volume 108, p. 99-108. Descartes suggests that clear and distinct perceiving brings joy in proportion to clarity and distinctness. Joy is predicated on true judgment. In Descartes' third Meditation, Schmitter writes that Descartes' contemplation of God and our deepest dependence on God – a contemplation of the perfection of our soul that perfects it yet further – "constitutes the greatest joy of which we are capable in this life." By joining ourselves to God in loving, devoted contemplation, we experience a joy that marks the truth of our perceiving.

<sup>153</sup>Ted Honderich (ed.), *The Oxford Companion to Philosophy*, Oxford, Oxford University Press, 1995, p. 377-381. Also see Richard Tamas, *op. cit.* p. 308-340.

<sup>154</sup>Robert Audi (ed.), *The Cambridge Dictionary of Philosophy*, 2<sup>nd</sup> ed., Cambridge, Cambridge University Press, 1999, p. 84. George Berkeley, 1685-1753.

<sup>155</sup>Richard Tamas, *op. cit.* p. 319. Tamas writes that the intellectual climate of the age of enlightenment brought with it a psychological change in the individual's belief regarding their fate in the afterlife.

<sup>156</sup>George H. Mead, *op. cit.* p. xvii.

<sup>157</sup>Anthony Quinton, *Hume*, New York, Routledge, 1999, p. 3, 30.

<sup>158</sup>*Ibid.* p. 30-31. Quinton writes that for Lock, memory in the sense of direct personal recollection is the relation that connects a temporally spread out bundle of experiences or mental states into a single, continuous self, mind or person. Hume's version differed in that he believed memory does not constitute, but discovers, personal identity.

<sup>159</sup>Paul F.H. Lauxterman, *Science and Philosophy: Schopenhauer's broken world-view*, Dordrecht, Holland, Kluwer Academic Publishers, 2000, p. 21. Kant's asserts that our knowledge possesses two sources, namely the receptivity of impressions and the spontaneity of concepts. When Kant informs his readers about the reversal of the relationship between science and the thinking subject – in other words, the Copernican revolution – he deduces the thinking subject from the possibilities posed by science. The author poses the question, is this the cleavage of the subject: the I perceives an empirical I.

<sup>160</sup>Richard Tarnas, *op. cit.* p. 337, 341. The mind, Hume speculated, could not know what *caused* a sensation, because *cause* was not an experience like a sensation. The mind experienced only simple impressions and atomized phenomena.

<sup>161</sup>Henry D. Aiken, *The Age of Ideology: nineteenth century philosophers*, New York, New American Library, 1956, p. 29. Plato conceived metaphysics as the science of being, the queen of sciences to which ethics is the system of natural laws that state the conditions under which men may realize their natures. Any distinction between laws of nature and normative principles is entirely foreign to their thoughts. This distinction, however, is fundamental to Kant.

<sup>162</sup>Richard Tarnas, *op. cit.* p. 334. Descartes, Spinoza and Leibniz are known as the continental philosophers, holding that the mind alone – through the recognition of clear and distinct, self-evident truths – could achieve certain knowledge. The British philosophers opposed this view because it was empirically ungrounded rationalism.

<sup>163</sup>*Ibid.* p. 345. Kant criticized the rationalists, like Leibniz, for postulating that reason without sense experience could comprehend the universe; he also criticized Lock and the empiricists for postulating that the world could be apprehended by sense impressions alone without *a priori* concepts of understanding.

See also Phillip Stokes, *Philosophy of 100 Thinkers*, Toronto, Indigo Books, 2002, p. 97. Kant's categories are substance, cause/effect, reciprocity, necessity, possibility, existence, totality, unity, plurality, limitation, reality and negation – all of which could be applied within a spatial and temporal framework. Kant claimed both the categories of space and time, which he termed forms of intuition that were imposed on phenomenal experience, and imprinted on the human mind, in order to make sense of the world.

See also Edwin McCann, "Locke's Theory of Substance under Attack", *Philosophical Studies*, Vol. 106, 2001, p. 87-105. It's interesting to compare them to Lock's categories outlined in *Treatment of Idea of Substance* from the *Essay Concerning Human Understanding* (1st ed., 1690, chapter 23, Book II. Locke wants to show that all our ideas, even those considered categorical – solidity, extension, existence, unity, succession, space, duration, number, infinity, causation, thinking, willing, perceiving, and of course, substance – can all be derived from experience, meaning sensation and reflection. These are his arguments against innate ideas.

<sup>164</sup>Henry D. Aiken, *op. cit.* p.15. In pre-Kantian philosophical speculations, the concept of objectivity was not a central concern. What was understood was a correspondence between the object to be known and that which was known about it. The intellectual faculties apprehended reason and the relationship between the object and its arrived knowledge was both external and a non distorting relation that did not affect the characteristics of the thing to be known, since it was assumed that there was a pre-established harmony of *the knowing mind* and the *real object of knowledge*.

<sup>165</sup>Robert Hopkins, "Beauty and Testimony", Anthony O'Hear (ed.), *Philosophy: the good, the true, the beautiful*, Cambridge, Cambridge University, Royal Institute of Philosophy, 2002, Supplement no. 47, p. 290-236. The notion of collective value resurfaces in Hegel's idea of the importance of history.



<sup>166</sup>H.J. Paton, *The Categorical Imperative: a study in Kant's moral law*, New York, Harper and Row, 1967, p. 157: Appendix: *The Law of Nature as a Type of the Moral Law*. Kant writes that the universality of law constitutes the form of nature. Nature, whatever it be, its matter is characteristically essential by the fact that in it all events take place in accordance with universal law – particularly the law of cause and effect.

<sup>167</sup>Henry D. Aiken *op. cit.* p. 37.

<sup>168</sup>*Ibid.* p. 38-39... "Moreover, if as Kant holds, the only legitimate theological or metaphysical convictions are those which are based, finally, upon the demands of the moral will, then two other crucially important branches of philosophic inquiry are also removed from the domain which, however liberally construed, may be called "science". In this historically important part of Kant's philosophy, one can, in short, see philosophy itself shifting from the super science to that of ideology. What is crucially significant, however, is that Kant himself can at once acknowledge this move in the case of ethics and still insists that it is a form of rational activity"...

<sup>169</sup>Michael Tanner, *Schopenhauer, Metaphysics and Art*, London, Phoenix Orion, 1998, p. 5.

<sup>170</sup>Arthur Schopenhauer, *The World as Will and Representation*, E.F.J. Payne (trans.), New York, Dover, 1958, Volume II, Chapter I: *On the Fundamental Views of Idealism*, p. 3

<sup>171</sup>*Ibid.* p. 3.

<sup>172</sup>Lucian Krukowski, "Genius and Will", Dale Jaquette (ed.), *Schopenhauer, Philosophy and the Arts*, Cambridge, Cambridge University Press, 1996, p. 153.

<sup>173</sup>Arthur Schopenhauer, *op. cit.* Volume II, p. 4.

<sup>174</sup>Henry D. Aiken, *op. cit.* p. 15.

<sup>175</sup>Arthur Schopenhauer, *op. cit.* Volume II, Chapter I: *On the Fundamental Views of Idealism*, p. 17. Note the translator's note on an allegorical drama in six acts by Krishna Misra (about 1200 A.D.) in which philosophical concepts appear as persons.

<sup>176</sup>*Ibid.* Vol. 2, Chapter I, p. 17-18.

<sup>177</sup>*Ibid.* Vol. II, Chapter I, p. 18.

<sup>178</sup>Michael Tanner, *op. cit.* p. 14.

<sup>179</sup>Paul F.H. Lauxterman, *op. cit.* p. 127.

<sup>180</sup>Arthur Schopenhauer, *op. cit.* Vol. II, Chapter XLVII: *Ethics*, p. 609. "In the hour of death", Schopenhauer writes, "whether man falls back into the womb of nature, or else no longer belongs to her. We lack image, concept, and word for the opposite, just because all these are taken from the objectification of the will, and therefore belong to that objectification; consequently, they cannot in any way express its absolute opposite; accordingly it remains for us a mere negation. However the death of the individual is in each case the unwearidly repeated question of nature to the will-to-live."

<sup>181</sup>*Ibid.* Vol. II, Chapter XXXVI: *Aesthetics of the Plastic and Pictorial Arts*, p. 419.

<sup>182</sup>Arthur Schopenhauer, "The World as Idea", E.F.J. Payne (trans.), Herman Glaser (ed.), *The German Mind of the Nineteenth Century*, New York, Continuum Publishing, 1981, p. 124.

<sup>183</sup>*Ibid.* p. 150-161.

<sup>184</sup>Henri Bergson, *Matter and Memory*, Nancy Paul and Scott Palmer (trans.), London, Allan & Unwin, 1962, p. 61. (First published in 1908) Chapter II: Pure Memory, p. 175-179.

<sup>185</sup>*Ibid.* p. 23. Chapter I, p. 61. ... "The image is apart from sensations. For all education can do is to associate the actual affective sensation, the idea of a certain potential of sight and touch, so that a definitive affection may evoke the image of a visual or tactile impression, equally definitive. p. 77. [...] Subject and Object would unite in an extended perception, the subjective side of perception being the contradiction affected by memory, and the objective reality of matter fusing with the multitudinous and successive vibrations into which this perception can be internally broken up. [...] Questions relating to subject and object, to their distinction and their union, should be put in terms of time rather than space".

<sup>186</sup>George H. Mead, *op. cit.* Chapter XIV, p. 293 -294. Science raises problems for philosophy. See Vitalism. Henri Bergson's *élan vital* is the force in nature which pushes organisms on. While man is subject to this force, no direction is indicated by it. Man uses this force (that has no specific goal) to progress through his daily tasks, which are guided by his own interests and necessity. All that can help man to get a picture of the world is his intuition, Bergson says, since the movement of any development is described by him as anti-intellectual.

<sup>187</sup>S.I.M. Du Plessis, *The Compatibility of Science and Philosophy in France, 1840-1940*, Capetown, A.A. Balkeman, 1972, Chapter II: *Status of Exterior and Interiority*, p. 29-39, 218. The perennial distinction of interiority and exteriority rests on the extreme position that the thinking subject can ignore all exterior phenomena and simply attempt to interpret the world by subjective references; the contrary is the exterior monism that attempts to exclude all subjectivity and cognition concerned with objects as they are. Positivism was predominantly the latter – social physics and sociology with no interest in psychology. Roger Bacon and the reference to the creative action of the bee is one of its first historical examples. Yet while each position has been taken, the thing in itself – *das-Ding-an-sich* – can be seen to transcend either or both.

<sup>188</sup>Virginia Spate, *Claude Monet: life and work*, p. 285.

<sup>189</sup>A.E. Pilkington, *Bergson and his Influences: a reassessment*, Cambridge, Cambridge University Press, 1976, p. 12-20, 180, 109, 135-137, 211. Valéry also differentiated between the effect of the modernist shock, whose intentions he argued was to break with conventions (e.g. Duchamp) to the *authentic* surprise of original art.

<sup>190</sup>A.E. Pilkington, *op. cit.* p. 135.

<sup>191</sup>Georges Clemenceau, "Claude Monet", Charles F. Stuckey (ed.), *op. cit.* p. 366.

<sup>192</sup>Monet insisted that meals were to be served at exactly the same time every day – 11:45am; that the garden be perfectly organized to his aesthetic criteria, and always kept in good repair. Monet's dream would have been to control the weather itself according to his liking!

<sup>193</sup>Robert Gordon and Andrew Forge, *op. cit.* p. 237.

<sup>194</sup>John House, "Time's Cycle", *Art in America*, October 1992, p. 127-161. He proposes the virtues of rural life that he felt were missing from city life, producing a representation of rural life full of esthetic values driven by city life.

<sup>195</sup>Virginia Spate, *Claude Monet: life and work*, p. 280. Both Alexandre and Clemenceau enabled Monet to find a solution to the Orangerie site. Monet was determined to keep the oval room concept, and with this in mind in November 1921 indicated to Paul Léon, Director for the Ministry of Fine Arts, that he was offering 18 panels that formed 8 compositions for two rooms, instead of the original 12 panels for one room. The final order of panels was not determined until the very end of his life, when Monet had made provisions for their final order. Because of his fluctuating eyesight, Monet worked and rethought and rearranged them till the end. The setting sun was painted in the summer of 1922.

<sup>196</sup>Francois Thiébaud-Sisson, "Claude Monet Water Lilies", *La Revue de L'Art Ancien et Modern*, June 1927, Charles F. Stuckey (ed.), *op. cit.* p. 293.

<sup>197</sup>Charles F. Stuckey (ed.), *op. cit.* p. 26: "Boudin, who would introduce the teenaged Monet to painting..."

<sup>198</sup>Carla Rachman, *op. cit.* p. 38. Boudin had encouraged Monet to look out at the sky, to capture the precise feeling of a fleeting moment in the open air looking out from the land to the sea.

<sup>199</sup>Clement Greenberg, "Claude Monet: the later Monet", *News*, 1957, Charles F. Stuckey (ed.), *op. cit.* p. 378.

<sup>200</sup>Virginia Spate, *Claude Monet: life and work*, p. 274.

<sup>201</sup>Charles F. Stuckey (ed.), *op. cit.* p. 296.

<sup>202</sup>Francois Thiébaud-Sisson, *op. cit.* p. 292.

<sup>203</sup>Monet's authenticity also lies in his philosophical insistence on self-determination, subjectivity and the accountability of the individual: Rousseau's social contract – by the people, for the people. The installation at the Orangerie was, after all, a gift for the people of France implicit in which was the question for Monet: what is one's relationship to the body politic – how should it be defined? With the transference of authority from the *Ancien Régime* to the Bourgeoisie – as well as the additional responsibility handed to the working classes to defend their own interests – the individual is given an opportunity to feel and be responsible to society. For Monet, as for modernism itself, the issue was: what *ought* to be done?

<sup>204</sup>Hilton Kramer, "Monet in Chicago", *Modern Painters*, Autumn Vol. 8, 1989, p. 88. Roger Fry in 1945 observed that no attempt by Monet was made to organize the vision in any way, there is no [spatial] pattern, no apparent rhythm. Such unity as there is depended on the uniform quality of the texture. Ten years later, Greenberg came to the same conclusion. Greenberg's reading of Monet's surfaces as flat was to exclude the relationship of the subjective body as will through the layered texture. He was looking for the traditional idea of projective space, and he emphasized the phenomenal aspect of colour and texture (without the idea of will), giving integrity to the surface – when in fact it was the body.

<sup>205</sup>Claude Monet, *op. cit.* p. 52. From a reported conversation with Georges Clemenceau at Giverny. For Schopenhauer, death was not the end nor really an opposition to life: life and death were interdependent and interconnected. In the absence of life, the metaphysical or thing-in-itself – Will – existed. Monet's will to live could be understood as expressed through his fidelity to his own perceptions. Yet paradoxically, Monet did not want to reduce the world to his own measure, but to enlarge his knowledge of things in order to enlarge the knowledge of the self. Monet, like Kant and Hume, stood in terror of the vacuum created by the impossibility of the mind to grasp reality. With a great tenderness, he signed the portrait with a positive optimistic signature that slopes upwards, ending the writing of his own name with the sentiment of a little perfectly formed heart. (see illustration.)

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- <sup>206</sup>*Ibid.* p. 34. This conversation was reported by George Clemenceau to George de Bellio.
- <sup>207</sup>*Ibid.* p. 34. Again, this conversation was reported by George Clemenceau to George de Bellio.
- <sup>208</sup>Virginia Spate, *Claude Monet: life and work*, p. 312. See illustration, p. 112.
- <sup>209</sup>Hilton Kramer, *op. cit.* p. 89.
- <sup>210</sup>Virginia Spate, *Claude Monet: life and work*, p. 312. See illustration, p. 270: preliminary drawings for the Grand Decorations.
- <sup>211</sup>R.R. Bernier, "The Subject and Painting: Monet's language of the sketch", *Art History*, Vol. 12, No. 3, September 1989, p. 298-321.
- <sup>212</sup>*Ibid.* p. 317-318. Monet defended his method of painting by saying they were fleeting moments. And the critic Frederick Chevalier in 1877 puts down Monet's painterly procedure as a willed requisite incoherence: a deliberate act of visualizing our imagination is in control of determining the material of our senses, giving it a form while remaining free from fixing it into any one combination – acknowledging, albeit disparagingly, the *Zeitgeist* of the period.
- <sup>213</sup>Charles F. Stuckey (ed.), *op. cit.* p. 333. See also Thiébauld-Sisson, *op. cit.* Charles F. Stuckey (ed.), *op. cit.* p. 291.
- <sup>214</sup>Réne Gimpel, "Diary of an Art Dealer, 1918 – 1923", Charles F. Stuckey (ed.), *op. cit.* p. 306.
- <sup>215</sup>John House, *op. cit. Art in America*, October 1992, p. 129.
- <sup>216</sup>Virginia Spate, *Claude Monet: life and work*, p. 276
- <sup>217</sup>*Ibid.* p. 276.
- <sup>218</sup>Charles F. Stuckey (ed.), *op. cit.* p. 292. See also Francois Thiébauld-Sisson, *op. cit.* p. 291. To understand the fundamental nature of his conviction to these two positions is to understand that he also completely created the external world of Giverny: he designed and planted by himself much of the vegetable, flower and water garden – with the assistance of gardeners when he could later afford them – in carefully orchestrated arrangements with imported exotic and local fauna. He also designed with the local mason his large studio without windows, only using skylights, for his execution of the Nymphéas decorations.
- <sup>219</sup>Clement Greenberg, *The Collected Essays and Criticism*, John O'Brian (ed.), New York, Continuum Publishing, 1981, Vol. 3: *Affirmations and Refusals, 1950-1956 – A Critical exchange with Fairfield Porter on "American-Type" Painting*, p. 236-237.
- <sup>220</sup>Georges Clemenceau, "Claude Monet", Charles F. Stuckey (ed.), *op. cit.* p. 353.
- <sup>221</sup>Francois Thiébauld-Sisson, *op. cit.*, Charles F. Stuckey (ed.), *op. cit.*, p. 293.
- <sup>222</sup>Claude Monet, *op. cit.* p. 34.

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<sup>223</sup>D.R. Bretell, "Chicago Claude Monet, 1840-1926", *Burlington Magazine*. Vol. 137, November 1995, p. 772, 771-774.

<sup>224</sup>Karl Barth, *Protestant Theology in the Nineteenth Century: its background and history*, Grand Rapids, Michigan, 2001, p. 165

<sup>225</sup>*Ibid.* p. 167. Concerning the origins and reasons of inequality among men, Rousseau's answer includes: "It is with tools and reflection, with property and cultivation of the soil that he becomes a social being [...] the first man who staked out a piece of land and dared to say: this belongs to me! and found people foolish enough to believe him was the founder of bourgeois society."

<sup>226</sup>Jean-Jacques Rousseau, *The Social Contract and the Discourse on the Origin of Inequality*, Lester G. Crocker (ed.), p. xvi.

<sup>227</sup>Karl Barth, *op. cit.* p. 180.

<sup>228</sup>*Monet's Years at Giverny: beyond Impressionism*, New York, Abrams, 1978, p. 38.

<sup>229</sup>Karl Barth, *op. cit.* p. 220-223. Lessing's interest in drama and poetry was reflected in his belief that what was being represented was always an indirect representation of this inner nature. As Barth writes: "Lessing dared to suggest that the object of art could be the nature of man himself. That this nature was subject to fluctuations and a variety of influences that could be observed by the actions of the individual."

<sup>230</sup>*Ibid.* p. 225. See also *Theologische Schriften*, I V, p. 166.

<sup>231</sup>Clement Greenberg, *The Collected Essay and Criticism*, Vol. 3, p. 240.

<sup>232</sup>*Ibid.* p. 229.

<sup>233</sup>Evonne Levy, *Propaganda and the Jesuit Baroque*, Berkeley, University of California Press, 2004, p. 54-55. Hume had already pointed out and been critical of the church's method of persuasion – propaganda by the miracle myth. Levy points out that in the nineteenth century there was a great deal of discussion concerning the cause of the French Revolution, an example being the art historian Hippolyte Taine's widely read revisionist history, *Les Origines de la France contemporaine, 1875-1893*, in which he proposes that it was an effect of mass psychosis. Levy argues that this initiated the concept of psychological techniques of persuasion, and contributed to making people suspicious of images that might be loaded with particular meanings. I would elaborate on this and suggest that the landscape then became also a retreat from dealing with more controversial subjects.

<sup>234</sup>Karl Barth, *op. cit.* p. 236-237.

<sup>235</sup>*Ibid.* p. 411. The contemporary historian Gass in his *Geschichte der Protestantischen Dogmatic* (1867) wrote that Schleiermacher's *Doctrine of Faith* ushered in a new period in the history of the church.

<sup>236</sup>Karl Barth, *op. cit.* p. 521. It is important to recognize that many of the new theological viewpoints, even though it might not be formally acknowledged, are very similar – and I would even suggest that they were appropriated from Buddhist and possibly other religious teachings. For example, Feuerbach's definition of the inseparability of God, Nature and Man is very reminiscent of the Buddhist doctrine of Oneness: see D.T. Suzuki, *Essays in Buddhism*, New York, Grove Press, 1961, p. 194-195. "When we know that between this body and Buddha there is nothing to separate one from the other, what is the use of seeking after Nirvana [as something external to ourselves]?"

<sup>237</sup>Jennifer Michael Hecht, *Doubt: a history*, San Francisco, Harper-Collins, 2003, p. 470-473: *Enlightenment meets Enlightenment*. In France it was the American-born Grace Constant Lounsbury in 1920 who popularized Buddhism, which had already by 1875 established eight Buddhist temples in the city of San Francisco alone.

<sup>238</sup>Schlegel also translated the *Bhagavad-Gita* from a Latin translation in 1823, followed by the *Ramayana* in 1829.

<sup>239</sup>Theism, a belief in one God and creator of the universe, without the rejection of revelation.

<sup>240</sup>Arthur Schopenhauer, *The Fourfold Principle of Sufficient Reason*, La Salle, Illinois, Open Court Publishing, 1988, p. 184. See also *Asiatic Researches*, Vol. VI, p. 268.

<sup>241</sup>*Ibid.* p. 184-185.

<sup>242</sup>Daniel Wildenstein, *op. cit.* p. 396, 399.

<sup>243</sup>The death of his second wife Alice and his gravely ill step son. Painting was now truly a matter of surviving as an artist and this perhaps more than anything brought him to the point of giving over to his own unconscious survival and perceptual reflexes.

<sup>244</sup>Richard Shiff, "John House. Monet: nature into art"; a book review, *The Art Bulletin*, March 1991, Volume LXXIII Number I, p. 151 p. 151.

<sup>245</sup>Thomas McEvelley, *op. cit.* p. 18.

<sup>246</sup>*Ibid.* p. 18: A late water-garden monochrome, *Nirvana Jaune*, was found in Monet's studio after his death.

<sup>247</sup>Will Durant and Ariel Durant, *Rousseau and Revolution*, New York, Simon & Schuster, 1967, p. 180 -181.

<sup>248</sup>Simon Schama, *Landscape and Memory*, New York, Knopf, 1996, p. 536, 547. At the height of the French war on religion, Bernard Palissy, a hydraulic engineer, chemist and a naturalist, initiated a new conception of the French garden. The intent was to bring the primal world – Nature's secrets – into the shelter of the garden, modeled after the river of Eden, with hydraulic fountains and suggestions of sylvan origins. Simon Shama, writing about the romanticism associated with the Barbizon artists and the forest of Fontainebleau, makes the comment that while they were interested in preserving this forest to give it back to the people, they were essentially more interested in constructing a context for the urban bohemian as inspired by the writer Claude François Denecourt's *dit le Sylvain*, seeing themselves as the guardian spirit of the forests of Fontainebleau. Shama writes: "Above all, he made it possible for themselves – urban bohemians – to escape the crushing monde of bourgeois Paris and rediscover their own nature and the world's amidst the peace and solitude of the forest."

<sup>249</sup>Photographs of Monet taken as he painted show him surrounded by chairs, an easel, umbrella's, canvases and frequently people.

<sup>250</sup>Will Durant and Ariel Durant, *op. cit.* p. 5-10. Rousseau's middle class grandfather was a Calvinist minister. His father, however, was the very contradiction of Calvinist morality – a bon vivant who traveled the world and loved reading romance novels and Plutarch's *Lives* to his son.

<sup>251</sup>Charles F. Stuckey, *Monet: a retrospective*, p. 286: col. Plate 110, *Self-portrait*, 1917, Galerie du Jeu de Paume, Musée du Louvre, Musées nationaux, Paris.

<sup>252</sup>Daniel Wildenstein, *op. cit.* p. 10. Wildenstein writes that by Monet's own account he spent most of his time as a child in the outdoors of Le Havre where he had lived five minutes from the sea – running in the sun along the cliffs and beaches. See also Karin Sagner-Düchting, *Claude Monet 1840 – 1926*, p. 199.

<sup>253</sup>Carla Rachmen, *op. cit.* p. 339.

<sup>254</sup>A profession at the time only considered suitable for women.

<sup>255</sup>Daniel Wildenstein, *op. cit.* p. 16.

<sup>256</sup>Lucien Decaves, "At Home with Claude Monet", *Paris Magazine*, August 25, 1920, Stuckey (ed.), *Monet*, p. 278.

<sup>257</sup>Steven Z. Levine, *op. cit.* . xv. The female voice, Echo, first condemned to repetition and then to silence, as the living body of her would-be lover is transformed into a funeral flower before her very eyes.

<sup>258</sup>Michel Georges-Michel, *De Renoir Á Picasso*, 1954, Stuckey (ed.), *Monet*, p. 295. "Monet said, pointing to the wall, it'll be as though one were in the middle of a pond." Michel's recollection from a visit with Monet.

<sup>259</sup>Karin Sagner-Düchting, *Claude Monet, 1840-1926*, Köln, Taschen, 2004, p. 199. "The Garden was both a translation of nature into art and a longed-for inner landscape. Such enclosed and artificial gardens became particularly popular in the art of the turn of the century as ideal, un-spoilt, images of nature. It was in this context that the motif of the water lily with its feminine associations, made its appearance. The water lily, a flower which flourishes only in warm, swampy waters symbolized – and not just in Mallarmé's poem *The White Water Lily* (1895) – the mysterious source of life and the un-dividedness of being."

<sup>260</sup>Georges Clemenceau, *op. cit.* Charles F. Stuckey (ed.), *op. cit.* p. 356. Monet did not reveal to Clemenceau what his 'guiding principle' for the installation was. However, Clemenceau considers Room One, with its threatening storm, as a permanent five o'clock event, in opposition to Room Two's clear sky and glowing brightness.

<sup>261</sup>Peter Nichols, *The Politics of the Vatican*, London, Pall Mall Press, 1968, p. 79.

<sup>262</sup>Karl Barth, *op. cit.* p. 225.

<sup>263</sup>Virginia Spate, *op. cit.* p. 284.

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<sup>264</sup>Monet never actually denied or confirmed his belief in God.

<sup>265</sup>Stephen Mellville, "Colour has not yet been named: objectivity in deconstruction", Peter Brunette and David Willis (ed.), *Deconstruction and the Visual Arts*, p. 45.

<sup>266</sup>Friedrich Schleiermacher, *On Religion: speeches to its cultured despisers*, John Oman (trans.), Louisville, Kentucky, Westminster John Knox Press, 1994, p. 278-279.

<sup>267</sup>Clement Greenberg, *op. cit.* p. 236-237. In "A Critical Exchange with Fairfield Porter on 'American-Type' Painting", Porter writes that Greenberg speaks of Monet's suppression of value as its emphasis, by disassociating it from chiaroscuro – in other words, a shift in hue but not value. This gives the painted areas different degrees of opaqueness and different feelings of substance and weight.

<sup>268</sup>Jon Kear, "Making Hay with Monef", *Art History*, Vol. 14, no. 4, December 1991, p. 593-608. The myth exists that impressionist used colour only straight out of the tube. While that is also not the case for Monet; nevertheless, even premixed colours when laid down are subject to the same effects of simultaneity: one colour occupying a separate space to another area of colour elicits a form of energy and influences the perception of the colours next to it.

<sup>269</sup>Jean-Jacques Rousseau, *The Social Contract*, Maurice Cranston (trans.), p.183.

<sup>270</sup>R.R. Bernier, *op. cit.* p. 312. A nineteenth century French critic writing in *La Chronique des arts et de curiosité*: "elles dénotant la plus profonde ignorance du dessin, de la composition, du coloris"

<sup>271</sup>Daniel Wildenstein, *op. cit.* p. 11. See also Will Durant and Ariel Durant, *op. cit.* p. 180-181. Rousseau believed in the natural unfolding of a young child's playfulness, desire and will, before discipline and rules should be applied to socialize them. Monet as a child was not only striving, but acting out the embodiment of Rousseau's 'Natural Child'; as he told of himself, all my youth I resisted discipline.

<sup>272</sup>Jacques Barzun, *From Dawn to Decadence*, New York, Perennial, 2001, p. 664. The Theosophy of Madam Blavatsky was a mixture of Oriental metaphysics and religion. The Buddhist myth appealed to and comforted the new responsibility of a secular individualism. See also Levine, *Monet, Narcissus and Self-Reflection*, p. 18-21.

<sup>273</sup>Steven Z. Levine, *op. cit.* p. xiii.

<sup>274</sup>Thomas McEvelley, *op. cit.* p. 19. This painting was most likely done during the period when Monet had problems with his eyesight, and he produced many paintings with a primarily bluish or yellowish cast.

<sup>275</sup>*Ibid.* p. 338.

<sup>276</sup>Noëll Carroll, "On Being Moved by Nature: between religion and natural history", Alex Neill and Aron Ridley (eds.), *Arguing about Art*, London, Routledge, 2001, p. 171.

<sup>277</sup>*Ibid.* p.169.

<sup>278</sup>Daniel Wildenstein, *op. cit.* p. 458.



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<sup>279</sup>Jon Kear, *op. cit.* p. 593-608.

<sup>280</sup>Daniel Wildenstein, *op. cit.* p. 458.

<sup>281</sup>William Seitz, *op. cit.* Charles F. Stuckey (ed.), *op. cit.* p. 367.

<sup>282</sup>James Elkins, *What Painting Is*, New York, Routledge, 2000, p. 11. Elkin writes: "Monet tried to make marks that would not congregate into herds like Seurat's dots sometimes do. Each mark has to be different. If one is thin the next one has to be thick, if one is curved the next has to be straight, or a zigzag must be crossed by an ellipses." Although this works theoretically, and in a sense can be interpreted as a plus and minus – each one neutralizing the other, this is in fact not really the case. Monet does mix strokes, but he permits each area in the Orangerie paintings to be dominated by a principle sensation – be it of depth or surface, primarily circular, vertical, horizontal, crisscrossing or diagonal. It is these different areas or subplots that coexist to give the sum total to the energy of each field.

<sup>283</sup>Anonymous. *Easy Lessons in Natural Philosophy, Natural History, Mechanics, Chemistry, Electricity, Optics, and Acoustics*, London, Houlston and Wright, 1864, p. 149-157.

<sup>284</sup>David Park, *Fire in the Eye, a historical essay on the nature and meaning of light*, Princeton, New Jersey, Princeton University Press, 1997, p. 205.

<sup>285</sup>Ralph E. Sweeting, "Life and Optical Research of Isaac Newton", *The American Journal of Physiological Optics*, January, 1922, Volume III, No. I, p.233, 219-237.

<sup>286</sup>David Park, *op. cit.* p. 205. Hook makes a comparison between light and sound and argues its impossibility.

<sup>287</sup>Anonymous, *op. cit.* p. 149-157.

<sup>288</sup>*Ibid.* p. 149-157.

<sup>289</sup>*Ibid.* p. 149.

<sup>290</sup>William Molyneux, "A Treatise of Dioptricks", *American Journal of Physiological Optics*, January 1922, Vol. III, No.I. p.14. We read in the treatise of *Dioptricks from the Sphericks* by William Molyneux the answer to the question he posed: What is the cause of refraction? [...] *That hereby the ray may proceed the easiest way possible.* This surely may oppose the most obstinate *Opposers of Divinity*: For certainly, if we can rely upon any *Deductions or Consequences* drawn out by the *Mind of Man*, we may assuredly rest satisfied in this; That so many *Phenomena*, stupendous and surprising for their *designed Contrivance* could not proceed but from an *Omnipotent and Designing Being*.

<sup>291</sup>Martin Jay, *Downcast Eyes: the denegration of vision in the twentieth-century French thought*, Berkeley, University of California Press, 1994, p 151-158.

<sup>292</sup>A.I. Sabra, *Theories of Light, from Descartes to Newton*, London, Oldbourne, 1967, p. 231-250, 250-297.

<sup>293</sup>David Park, *op. cit.* He was, however, also trying to bring this research into the nature of light into the spiritual realm.

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<sup>294</sup>*Ibid.* p. 245-250.

<sup>295</sup>Ernst Mach, *The Principle of Physical Optics: a natural history and philosophical treatment*, John S. Anderson (trans.), New York, Dover, 1969, p. 157-163.

<sup>296</sup>*Ibid.* p. 272-306.

<sup>297</sup>*Ibid.* p.163, 133-163.

<sup>298</sup>David Park, *op. cit.* p. 283.

<sup>299</sup>Thomas C. Mendenhall, "von Helmholtz," *American Journal of Physiological Optics*, April, 1921, Vol, II, No. I, p. 112.

<sup>300</sup>David Park, *op. cit.* p. 286-288.

<sup>301</sup>Herman Ludwig von Helmholtz, "The Description of the Ophthalmoscope", Thomas Hall Shastid (trans.), *American Journal of Physiological Optics*, April, 1921, Vol, II, No.I, p. 121, 151, 121-179.

<sup>302</sup>*Ibid.* p. 151,

<sup>303</sup>Eugene Wiseman, "Cerebral Malprojection of the Spatial Point Due to Unconscious Habit," *American Journal of Physiological Optics*, January 1922, Vol. III, p. 73.

<sup>304</sup>Martin Jay, *op. cit.* p. 152.

<sup>305</sup>Beaumont Newhall, *History of Photography*, New York, Museum of Modern Art, 1964, p. 17-28. See *The Mirror with a Memory*.

<sup>306</sup>Susan Sontag, *On Photography*, New York, Delta Books, 1977, p. 3-8.

<sup>307</sup>Jonathon Crary, *Suspension of Perception: attention, spectacle and modern culture*, p. 226.

<sup>308</sup>Martin Kemp, *The Science of Art: optical themes in Western art from Brunelleschi to Seurat*, New Haven, Yale University Press, 1990, p. 297-298.

<sup>309</sup>Jonathon Crary, *Techniques of the Observer*, p. 85-89.

<sup>310</sup>David Park, *op. cit.* p. 244.

<sup>311</sup>Charles Sheard (ed.), "The Centenary of the Birthday of Von Helmholtz", *The American Journal of Physiological Optics*, April, 1921, Vol. II No. I. p. 162, p. 157-182. See *The Movements of the eye during reading*.

<sup>312</sup>David Park, *op. cit.* p. 244.

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- <sup>313</sup>John Gage, *Colour and Meaning: art, science, and symbolism*, Berkeley, University of California Press, 2000, p. 242.
- <sup>314</sup>*Ibid.* p. 196-200.
- <sup>315</sup>Martin Kemp, *op. cit.* p. 306.
- <sup>316</sup>*Ibid.* p. 306, 321.
- <sup>317</sup>*Ibid.* p. 306-307.
- <sup>318</sup>O.L. Zangwill, "Wilhelm Max Wundt", Richard Gregory (ed.), *The Oxford Companion to the Mind*, Oxford, Oxford University Press, 1986, p. 816-817.
- <sup>319</sup>Heinrich Wölflin, "Promologema to a Psychology of Architecture, 1886", Charles Harrison and Paul Wood with Jason Gaiger (eds.) *op. cit.* p. 712, 711-717.
- <sup>320</sup>P.F. Swindle, "A Physiological Explanation of Certain Optical Illusions", *American Journal of Physiological Optics*, January 1922, Vol. III. No. I. p. 241, 245, 238-255.
- <sup>321</sup>Jonathon Crary, *Techniques of the Observer*, p. 119.
- <sup>322</sup>Eugene Wiseman, *op. cit.* p. 75, 84-85, 86.
- <sup>323</sup>Germain Bazin, *Impressionist Paintings in the Louvre*, London, Thames & Hudson, 1972, p. 240.
- <sup>324</sup>Andrew Forge, "Monet at Giverny" (introduction), Clair Joyes, *Monet at Giverny*, New York, The Two Continents Publishing Group, 1977, p.7.
- <sup>325</sup>*Ibid.* p. 7.
- <sup>326</sup>Virginia Spate, *Claude Monet: the colour of time*, p. 284.
- <sup>327</sup>Clair Joyes, *Monet at Giverny*, New York, Two Continents Publishing Group, 1977, p. 20.
- <sup>328</sup>*Ibid.* p. 40.
- <sup>329</sup>Virtually no pictures exist between 1909 and 1914, according to Karen Sagner, due to Monet's deteriorating sight. His problem was diagnosed in 1912: see Karin Sagner-Düchting, *op. cit.* p. 204.
- <sup>330</sup>Jean Rebière, *Claude Monet, le medicine de*, Paris, La Bibliothèque des Arts, 1986, p. 53.
- <sup>331</sup>Virginia Spate, *Claude Monet*, p. 284.
- <sup>332</sup>*Ibid.* , p. 271-285
- <sup>333</sup>*Ibid.* p. 284.

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<sup>334</sup>Daniel Wildenstein, *Monet's Years at Giverny*, p.35-36.

<sup>335</sup>Virginia Spate, *Claude Monet: life and work*, p. 284.

<sup>336</sup>Daniel Wildenstein, *Monet's Years at Giverny*, p. 35-36. Monet's visual condition, Xanthopsia, was very rare, seeing mainly yellow or blue. This eventually corrected itself and his vision improved when the Zeiss lenses arrived for him in July, 1925.

<sup>337</sup>Grace Sieberling, *Monet's Series*, New York, Garland Publishing, 1981, p. 262

<sup>338</sup>*Ibid.* p. 262.

<sup>339</sup>Paul Hayes Tucker, *Claude Monet: life and Art*, p. 197.

<sup>340</sup>Charles F. Stuckey, *Nymphéas*, Paris, Köneman, 1988, p. 88. Richard Marx in June 1909 wrote in the Gazette des Beaux-Arts an article titled "*Les Nymphéas de M. Claude Monet*".

<sup>341</sup>Charles F. Stuckey, "*Monet's Art and the Act of Vision*", John Rewald and Frances Wetzenhoffer (eds.), *Aspects of Monet*, New York, Abrams, 1984, p. 109.

<sup>342</sup>Gustav Khan, *Exposition Claude Monet*, Paris, Gazette des Beaux Arts, 32, 1904, p.83-84. Ce sont des tableau élaborés d'après des notestation exactes.

<sup>343</sup>R.R. Bernier, "The Subject of Painting: *Monet's 'language of the sketch'*", *Art History*, Vol. 12, No. 3 September 1989, p.303.

<sup>344</sup>Paul Hayes Tucker, *Monet in the 90's: the series paintings*, New Haven, Yale University Press, 1989, p.81: *Effect of Snow, Setting Sun, 1874-75*, Musée Marmottan, Paris.

<sup>345</sup>Charles F. Stuckey, *op. cit.*, John Rewald and Frances Wetzenhoffer (eds.), *op. cit.*, p. 109-110

<sup>346</sup>Paul Hayes Tucker, *Monet in the 90's: the series paintings*, p.77.

<sup>347</sup>Henri Dorra, "*Valenciennes's Theories: from Newton, Buffon and Diderot to Corot, Chevreul, Delacroix, Monet and Seurat*", *Art Bulletin*, May, 1994, p. 185.

<sup>348</sup>Gustav Khan, *op. cit.* p.83-84

<sup>349</sup>Charles F. Stuckey, *Nymphéas*, p. 92.

<sup>350</sup>Paul Hayes Tucker, *Claude Monet: life and art*, p. 190.

<sup>351</sup>*Ibid.* p. 191.

<sup>352</sup>Clair Joyes, *op. cit.* p. 20.

<sup>353</sup>*Ibid.* p. 22.

<sup>354</sup>Paul Hayes Tucker, *Monet in the 90's: thye series paintings*, p.77.

<sup>355</sup>P.M. Harman, *Energy, Force, and Matter: the conceptual development of 19<sup>th</sup> century physics*, Cambridge, Cambridge University Press, 1982, p. 2. The theoretical innovations of the physics of the nineteenth century include: the concept of the physical field; the theory of luminiferous and electromagnetic ether; and the concept of the conservation and dissipation of energy. All were formulated according to the mechanical view, which understood that matter in motion was the basic principle of all physical phenomena. Physics of the 1850's became a science of quantification searching for *universal* mathematical laws and laws for the conservation of energy as a unifying principle within a mechanical explanation.

<sup>356</sup>Paul Bockstaele, "Experimental Physics at the University of Leuven during the 18<sup>th</sup> Century", Joseph Dauben, Menso Faulkerts, Eberhard Knobloch and Hans Wussing (eds.), *History of Mathematics*, San Diego, Academic Press, 1996, p. 345, 362. In the eighteenth century the University of Leuven founded a school of experimental physics that combined the traditional teachings of theoretical physics with actual experiments – for example inventing a gas that was lighter than air. In 1785, the inventor Minkerlers was the first to use this gas to illuminate his lecture rooms. By 1794, a second French occupation incorporated southern Netherlands into France.

See also Hans Wussing, "Zur Grundgeschichte der Polytechnischen Gesellschaft zu Leipzig, 1825-1827", Dauben and collaborators (eds.), *History of Mathematics*, p. 363-376. Between 1825 and 1827 the first long distance steam locomotive ran between Leipzig and Dresden, and in 1835 the electromagnetic telegraph signaling system invented by Gauss and Weber was beginning to be discussed in relationship to its economic feasibility for the train system. See also Claude Monet, *op. cit.* p. 32. Monet, distressed by the lack of understanding concerning the appearance of his atmospheric paintings, decided that he would indulge the public by painting a train station filled with clouds of steam, showing the energy of the steam that suffused the air and the great hall in *La Gare Saint-Lazarre*, 1877. It's a fascinating sight. See P.M. Harman, *op. cit.* , p. 1-5.

<sup>357</sup>E. T. Bell, *Men of Mathematics*, New York, Simon and Schuster, 1986, p. 501.

<sup>358</sup>Carl B. Boyer, *A History of Mathematics*, New York, John Wiley & Sons, 1968, p. 544. The leading mathematicians in Europe, during the time of the French Revolution, had been primarily French, and the Institut de France was still the principal legitimizing agent for European mathematicians. It came as a bit of a shock when the most important nineteenth century mathematician turned out to be a German who had never left Germany. See E.T. Bell, *op. cit.* p. 261. The French mathematician Sophie Germain, who was in contact with Gauss, worked with new algebraic and number equations on the problems of acoustics and developed a theory of elasticity.

<sup>359</sup>E.T. Bell, *op. cit.* p. 240-242. Mathematics after Archimedes and until Gauss was considered a pragmatic practice. It was the French mathematician, Laplace, who worked to complete Newton's celestial mechanical project, bringing it into the realm of mathematical physics and, in the case of Newtonian mechanics, mathematical astronomy. Gauss worked out a rigorous method, published in 1809 as the *Theory of the Motion of the Heavenly bodies Revolving round the Sun in Conic Sections*. Within the discussion of planetary orbits lay the difficult analysis of perturbations, which became the dominant methodology for astronomy for some time to come. Hegel (1770-1839), referring to Newton's schema of seven planets, made the sarcastic remark after the discovery of Ceres that if they paid any attention to philosophy they would understand that an eighth planet was not possible!

<sup>360</sup>*Ibid.* p. 218-269.

<sup>361</sup>Carl B. Boyer, *op. cit.* p. 620. The rise of abstract algebra. See p. 230. Gauss was the creator of non-Euclidean geometry.

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<sup>362</sup>Gerhard Kropp, *Geschichte der Mathematik: Probleme und Gestalten*, Heidelberg, Quelle und Meyer, 1969, p. 33. Gauss, Lobatschewskij, and J. Bolyai all contributed to formulating non-Euclidean mathematics. Gauss also questioned whether infinite series converge, and formulated the correct use of infinite processes – eliminating absurdities of  $-1$  equals infinity.

<sup>363</sup>E.T. Bell, *op. cit.* p. 218, 219, 242-243. There was a lot of resistance to theoretical mathematics. Mathematicians of the period thought Gauss was wasting his time working out methods for a minor planet, and it was also believed by many that he was wasting his time when Gauss, twenty years later, worked on the mathematics to lay the foundations for electromagnetism and the electric telegraph. Gauss' position was that it was all the same to him whether he worked purely theoretically or on applied mathematics. It is also important to note that Gauss himself did not differentiate between the rigor he brought to theoretical mathematics on the one side, and pragmatic mathematics – its practical applications associated with the physical sciences like mechanics – on the other, this latter having been of greater interest to him in his youth. Gauss' uncle – his mother's brother – was a brilliant weaver of the finest damask. It is believed that he introduced Gauss at a very young age to the abstract thinking that can be related to the computational methods of patterns and weaving technology.

<sup>364</sup>*Ibid.* p. 223. Gauss, in mastering the *binomial theorem* of algebra, answered the question of the value of  $n$ , which does not have to be a positive integer or an undivided whole. The question asked by Gauss was whether infinite series *converge*. To know this was important because the very essence of analysis, he wrote, was the correct use of infinite processes.

<sup>365</sup>Gerhard Kropp, *op. cit.* On algebra and Gauss.

<sup>366</sup>Carl B. Boyer, *op. cit.* p. 568.

<sup>367</sup>P.M. Harman, *op. cit.* p. 79.

<sup>368</sup>E.T. Bell, *op. cit.* p. 255. Wilhelm Weber, who had worked with Gauss, gave an uncanny description in 1835 of his understanding of the nature and potential of electromagnetism and its field: "*when the globe is covered with a net of railroads and telegraph wires, this net will render service comparable to those of the nervous system in the human body, partly as a means of transport, partly as a means for the propagation of ideas and sensations with the speed of lightning*".

<sup>369</sup>Michael I. Sobel, *Light*, Chicago, University of Chicago Press, 1996, p. 125. Herman von Helmholtz and William Thomson, Lord Kelvin, proposed that the sun – by gradually shrinking – could slowly convert its gravitational energy into radiated light and heat. While this theory proved false, it is interesting to see the extent of speculation regarding ideas on the nature and exchange of energy.

<sup>370</sup>Kenneth McLeish (ed.), *Key Ideas in Human Thought*, New York, Facts on File, 1993, p. 227. The Invention in 1800 by Alessandro Volta of the battery that stored electricity with a continuous flowing electric current that could be measured was well known. Hans Oersted, in 1820, discovered that an electric current produced a magnetic field. Michael Faraday, in 1831, also showed that the electric field can produce an electric current, and started the investigation into electromagnetism, combining electrical and magnetic phenomena.

<sup>371</sup>P.M. Harman, *op. cit.* p. 84, 103-119. In a further development, Heinrich Hertz – in setting up an experiment to record electromagnetic waves – showed that Maxwell's assumptions about the propagation of electric force were consistent with the law of electrodynamics. Hertz discovered that by calculating the frequency of the oscillation, he was able to conclude that the velocity of the electric waves was equal to the velocity of light – in effect an exploration of the analogy between light and electric waves. He accomplished this by focusing the ray of light with mirrors, demonstrating their reflection and refraction through prisms. Mathematical explorations of the field of electrodynamics brought the Danish physicist Ludwig Lorentz (1829-1891) to form an electro-dynamic world view. He argued that ether was separated from ordinary matter and proposed, in 1895, that molecules of ordinary matter contained positive (ions) and, in 1899, that these and negative charged particles (electrons) were both embedded in an electromagnetic ether. He theorized that the electromagnetic field resulted from the motion of these particles, and that the field could act on ordinary matter by exerting forces on the electrons embedded in matter. However, he posited no mechanical connection between them.

<sup>372</sup>*Ibid.* p. 105.

<sup>373</sup>*Ibid.* p. 105.

<sup>374</sup>Thomas S. Kuhn, *The Structure of the Scientific Revolutions*, Chicago, University of Chicago Press, 1996, p. 107.

<sup>375</sup>Kenneth McLeish (ed.), *op. cit.* p. 442.

<sup>376</sup>P.M. Harman, *op. cit.* p. 80. See explanation, p. 81.

<sup>377</sup>Gerhard Kropp, *op. cit.* p. 154-156.

See also Florian Cajori, *A History of Mathematics*, New York, Chelsea, 1980, p. 251. Lagrange separated the principle of calculus from the geometric considerations by which his predecessors had derived them. He also worked with sound and acoustics by separating the particles and ether that moved in a straight line – i.e. light – and reduced the problem for the differential equation that represented motions of vibrating strings.

<sup>378</sup>Morris Klein, *Mathematics in Western Culture*, London, Oxford University Press, 1982, p. 419. Gauss questioned the idea of parallel lines meeting apparently in space, cautious about the unlimited extensibility of the straight line. The problem was about the increase in size of a measurement. Gauss experimented with a very large triangle whose angles varied by two degrees from the standard 180 degree measure of an equilateral triangle. The second question Gauss asked himself was whether the ray of light that theoretically followed a straight line over a very large measure was actually straight or possibly had a slight curve in it. Klein writes: "... while Gauss had the intellectual courage, he did not have the moral courage to contradict Kant, who postulated that there is no other geometry possible than Euclidean geometry

<sup>379</sup>E.T. Bell, *op. cit.* p. 250. The leap of imagination that is required to connect electromagnetic activity with fluid motion was done mathematically by Gauss. He had already understood the importance of mathematical analytical functions that inferred theories of fluid motions, a kind of mathematical electricity. But the flexibility of these analytic functions also made it possible for accurate representations of maps that do not distort angles

<sup>380</sup>*Ibid.* p. 260.

<sup>381</sup>E.T. Bell, *op. cit.* p. 263.

<sup>382</sup>*Ibid.* p. 263-269. There are three basic components to this theory: 1) the measurement of curvature; 2) the theory of mapping or *conformal representation*; and 3) surface or *applicability*. Gauss described space by four coordinates, not two, which helped to describe how the curvature of a surface varies to a greater or lesser degree from one point to another. I paraphrase an explanation by E.T. Bell, writing in 1960:

*If the total curvature is C, the normal to the surface is any straight line passing through that point that is perpendicular to the plane touching the surface at the given point. Therefore, any point on that surface can be called normal. The sphere has a centre, and if all the perpendiculars were of equal length extending from all the normal points, a perfect sphere would result. If radii of equal length are set out at an area of limited points on the surface, it becomes possible to define the total curvature of that particular area of any given surface.*

The second related idea Gauss explored is *parametric representation* in which two co-ordinates are required to specify a particular point. This can be related to the earth as longitude and latitude. Descartes' geometry represented surfaces using the three co-ordinates of xyz. If we consider a surface made up of points of *two-dimensional manifold*, the equation becomes  $x = f(uv)$ , in which uv stands for the other two unknowns,  $y = g(uv)$  and  $z = h(uv)$ . The exciting result was that in mapping the spherical surface of the earth latitude and longitude need not be distorted. One inch on the map shall equal some distance measured on the globe or surface of the earth: for example, the distortion of Greenland at the top. Its contemporary application is in electrostatics, hydrodynamics, and its offspring aerodynamics – important in the theory of the airfoil.

<sup>383</sup>*Ibid.* p. 263-264.

<sup>384</sup>Arthur Schopenhauer, *On the Fourfold Root of the Principle of Sufficient Reason*, E.F.J. Payne (trans.), La Salle, Illinois, Open Court Publishing, 1988, p. 198-206: section 39, *Geometry*. Schopenhauer states that geometry rests on the nexus of the position of the parts of space, theoretically making it an insight into that nexus as a link to the core or centre of reality. Yet he states the Euclidean idea of geometry persists in abstraction, and rests as insight in the ground of knowledge and not from insight into the ground of Being. For Schopenhauer, as for Einstein, intuition became the principal of mathematics.

<sup>385</sup>Morris Klein, *op. cit.* p. 426, 420-431.

<sup>386</sup>*Ibid.* Riemann's mapping theorem, p. 384. Riemann showed that two surfaces with equivalent cuts could be mapped onto each other without folding or tearing. See Surfaces p. 383, 397, 439. Riemann showed how to make a certain number of cuts in a *Riemann surface* so it becomes simply connected in that any closed curve may be smoothly shrunk to a point. Roger Cooke, *The History of Mathematics*, New York, John Wiley, 1997, p. 395. According to Bell, the German mathematician George Friedrich Bernhard Riemann (1826-1866) subsequently evolved Gauss' differential geometry in 1854 into a form which is still used today in theoretical physics and the theory of general relativity. Gauss was followed by Kummer (1810-1893), Kronecker (1823-1891), and Dedekind (1831-1916) with their modern theory of algebraic numbers which continued to enlarge infinitely the possibilities of arithmetic, and brought both algebraic equations and numbers together. This higher arithmetic and the theory of algebraic equations of Gauss, Lobatchewsky – also called the Copernicus of geometry – and Bolai has become the standard set of theorems known as hyperbolic geometry.

<sup>387</sup>*Ibid.* p. 410-419.

<sup>388</sup>Roger Cooke, *op. cit.* p. 429. The theory of relativity was the result of trying to evaluate the force on a particle of charge moving in an electrical field and a magnetic induction with velocity. The popular account is that relativity focuses on the constancy of the speed of light, and the mechanical effects: i.e. the contradiction of time and space and the body in motion.



<sup>389</sup>Morris Klein, *op. cit.* p. 433. This is in contrast with Newton who argued that there were scientific laws of absolute space and absolute time, even considering the earth as a moving entity, with God as a superhuman observer whose observation of space and time must be absolute. Albert Einstein, *Ideas and Opinions*, New York, Crown Publishers, 1982, p. 219-223. With Einstein's papers on the theory of relativity, all measures are relative to position, furnishing the groundwork on which much work in quantum theory was made possible – in particular Bohr's theory of the atom. In 1907 Einstein also wrote a paper on the theory of specific heat, and between 1924-1925 on the quantum theory of gases. Mathematics as a field of knowledge expanded the possibility of tapping into a previously recognized yet inaccessible dimension of energy that gave a new shape to the understanding of what constitutes material reality and the space that it occupied.

<sup>390</sup>N.Ya. Vilenkin, *In Search of Infinity*, Abe Shenitzer (trans.), Boston, Birkhaeuser, 1995, p. 72-73, 140. The first decisive step taken to construct algebra without a reliance on geometric concepts and to free it from an essentially intrinsic geometric terminology. Descartes took this first step by taking the segment previously identified as  $e$  and simply called it a *unit segment*. Significantly, now what would previously have been  $a$  and  $b$  as the area of a rectangle was now understood as  $a \cdot b$  – the length of a segment. This initiated a period of arithmetization of mathematics and replaced the geometric foundations with an arithmetic one, and the non-geometric construction of real numbers. Descartes also introduced the notion of variables and studied relations between variables.

<sup>391</sup>Roger Smith, *The Human Sciences*, New York, Norton, 1997, p. 259.

<sup>392</sup>Morris Klein *op. cit.* p 376 – p 394; Roger Cooke *op. cit.* p 399.- p 402 Jakob Bernoulli wrote a treatise in 1713 in which he suggested that the application of mathematical techniques to human life was problematic because of the gap between theory and application. He recommended the application of statistical studies for example to human health and longevity. The first proper as a treatise and application of probabilities was written in 1835 by the Belgian scholar Lambert Quetel 1796-1874 entitled *Physique Social* Gauss in 1809 wrote on the normal distribution errors now known as *Gaussian distribution*.

<sup>393</sup>*Ibid.* p. 386.

<sup>394</sup>Thomas S. Kuhn, *op. cit.* p. 168-170.

<sup>395</sup>Julian Bell, *What is painting?: representation of modern art*, London, Thames & Hudson, 1998, p. 63

<sup>396</sup>Clement Greenberg, *op. cit.* p, 302-303. Monet and Renoir, in the late 1870's, introduced what was to be termed *divisionism*, the divided tone technique that Greenberg et al also believe was responsible for the introduction of drawing with paint.

<sup>397</sup>E.T. Bell, *op. cit.* p. 261. The last example worth mentioning that describes the spirit and breadth of the new algebra is the Irish mathematician Hamilton, who worked for many years to invent a consistent algebra. He concluded that in order to find the solution to a complex mathematical problem,  $a \times b$  is not necessarily equal to  $b \times a$ . This was significant because it suggested that there was a vital importance in the relationship and sequence of one value to another.

<sup>398</sup>Theodor Duret, "Le Peintre Claude Monet", Charles F. Stuckey (ed.), *op. cit.* p. 73. While Monet's painting of *Houses at Argenteuil* (1873) is not the principal work here examined, nevertheless it is a good example that illustrates the paradigmatic shift of a new social cosmology that Monet observed. Monet, *en plein air* and positioned along the edge of a field, paints a scene of small darkly painted new cookie cutter row houses. These houses were possibly inhabited by the displaced now sub-urban factory workers. They stand awkwardly and in contrast next to a new brightly painted, much larger French country house, possibly owned by a wealthy farmer, merchant or a new wealthy local industrialist. The original village, marked by its steeple, seems to be in the distant background. The contrast between the repetitive small dark houses and the large prosperous looking white dwelling, seen from left to right, is startling and indicative of a movement, of an upward sweep of a positive sense of progress. Their unapologetic co-existence in this representation confirms the unsentimental nature of the artist, who is simply recording – in the moment of the gaze – an unedited stark reality of the sub-urban life of the nineteenth century: simply as a reflection of the developing industrial society. The once clear separations between city and countryside merge under a sky that is ambiguously sunny and hopeful but also cloudy and threatening with impending danger. To read this painting is to move from positive to negative energy, the two interconnected, interdependent and coexisting as a field within the same frame.

<sup>399</sup>*Ibid.* p. 88. In an early painting, *La Gare Saint-Lazare*, 1877, energy is also made visible by the bellowing steam from the train. Monet's captivation with the raw energy of industrialization captures this energy in the ultimate modern industrial building of glass and steel, the new train station. This is not a critique of modernist values, but a celebration of the visibility of manufactured energy and its power.

<sup>400</sup>Eric Gibson, "A Thoroughly Modern Monet", *Art News*, Summer 1995, p. 104-107. A revisionist view of the artist sees his late water lily paintings not just as the culmination of 19<sup>th</sup> century Impressionism, but as works that influenced early 20<sup>th</sup> century art. Both Stuckey and Gibson believe that Mondrian's *Church Facade* and *Pier and Ocean*, both from 1914, with their linear construction resembled a field of pluses and minuses, were influenced by Monet's *Rouen Cathedral* and *Water lily* paintings.

<sup>401</sup>Nicholas Wadley, "The Emancipation of Incoherence: Impressionist Drawings", London, *Apollo*, no. 142, November 1995, p. 47-50. Wadley writes on *La Gare St. Lazare* of 1877: "marks born from the urgency of the situation, no time to think, yet I take the position that he did think very quickly, assessed the nature of the energy emitted by the steam and its reaction to the air and the space within which it is captured. Monet developed a kind of shorthand for the meaning of each kind of energy and force. That is why there is no consistency because he placed both next to each other or overlapping interacting forces."

<sup>402</sup>James Elkins, *op. cit.* p. 11. Elkins writes: "Monet tried to make marks that would not congregate into herds like Seurat's dots sometimes do. Each mark has to be different. If one is thin the next one has to be thick, if one is curved the next has to be straight, or a zigzag must be crossed by an ellipses." Although this works theoretically, and in a sense can be interpreted as a plus and minus – each one neutralizing the other, this is in fact not really the case. Monet does mix strokes, but he permits each area in the Orangerie paintings to be dominated by a principle sensation – be it of depth or surface, primarily circular, vertical, horizontal, crisscrossing or diagonal. It is these different areas or subplots that coexist to give the sum total to the energy of each field.

<sup>403</sup>R.R. Bernier, *op. cit.* p. 298-320. Bernier interprets Monet's marks – their attention to fleeting appearances rather than ideal and permanent transcriptions – as an illegibility and imprecision, and an ineffectiveness of believable illusionism, arguing that it is this question of an unstable notion of reality that is appropriately depicted. Bernier points out that Monet's achievement was in transforming his subject beyond mere simulacrum.

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<sup>404</sup>Thomas S. Kuhn, *op. cit.* p. 169. Note Maxwell's new paradigm of light as waves propagating mechanically through a material ether. Monet uses the geometry in the interaction of two different fields or – applied to colour – two different values or hues that constructed a simultaneity that became his mechanism for generating light. It was necessary to design a mechanical medium, applying the dynamics of Newton's forces, innate to matter, that produced – after all – electricity and artificial light. The light generated by Monet.

<sup>405</sup>R.R. Bernier, *op. cit.* p. 317. Exploiting the tension between the subject matter and material, or between representation and material, by retaining the quality of a brushstroke need not distract the viewer from the subject. In the case of the paintings at Giverny, I would say the materiality of paint and its manipulation and raw presence are a large part of the nature of the subject matter.

<sup>406</sup>The only other experience I have had of this phenomenon was with the Agnes Martin retrospective at the Whitney in New York City in the 1970's, and the Yves Gauchier exhibition at the Brenda Wallace Gallery in Montreal in the 1990's. In both cases the gallery space was filled with a vaporous atmosphere of suspended colour.

<sup>407</sup>Clement Greenberg, "Claude Monet: the later Monet", Charles F. Stuckey (ed.), *op. cit.* p. 381.

<sup>408</sup>Carl A. Boyer, *op. cit.* p. 586.

<sup>409</sup>E.T. Bell, *op. cit.* p. 305. Einstein challenged Euclid's assumption that two events can happen in different places at the same time, while Lobachewsky challenged the assumption that Euclid's parallel postulate – the hypothesis of the right angle – is necessary to consistent geometry.

<sup>410</sup>Gauss' interest in lens systems is relevant here, but will be further examined through optical beliefs.

<sup>411</sup>E.T. Bell, *op. cit.* p. 529.

<sup>412</sup>George H. Mead, *op. cit.* p. 339: Chapter XV, *Realism and Pragmatism*.

<sup>413</sup>Monet, in an effort to maintain the integrity of the installation which he conceived and to which he contributed its ultimate design; from the beginning of its first conception at the Hotel Biron, the walls were circular.

<sup>414</sup>David Summers, *Real Spaces*, New York, Phaidon Press, 2003, p. 591.

<sup>415</sup>Unlike the photograph, in Monet's geometry there is no apparently homogenous receding water surface; instead, each patch appears to exist on a slightly different plane, giving the collective appearance of possibly existing on some convex surface that simultaneously bends the plane away from the viewer but – because of the curvature of the wall – contradicts and embraces the viewer in a concave space.

<sup>416</sup>Julian Bell, *op. cit.* p. 75. Perspective as a theoretical and practical prop described more *what should not be seen* than what could be seen, hemming the eye down to one place and forcing each observer to occupy a single relative position. Monet ignored these constraints when the painting's panoramic view demanded of the viewer a shift of position; also, by placing the viewer in the centre, the allocentric relationship dramatically inverts the principle of perspective.

<sup>417</sup>Clement Greenberg, *op. cit.* p. 233.

<sup>418</sup>Charles F. Stuckey (ed.), *Monet: a retrospective*, p. 295. Photo: Henri Manuel, Monet in the water-lilies studio, circa 1924, photo collection, Durand-Ruel, Paris.

<sup>419</sup>It is important to remember that the photograph is taken through a lens and therefore has its own type of distortion. See the section on optics.

<sup>420</sup>James Elkins, *op. cit.* p. 11-12.

<sup>421</sup>Cornelius Lanczos, *Space Through the Ages: the evolution of geometrical ideas from Pythagoras to Hilbert and Einstein*. London, Academic Press, 1970, p. 223-249. Einstein was primarily interested in knowledge that was generated from the inside, and this is born out by his theory of relativity, central to which is a person's relative observation. Similarly, his theory of gravitation and motion: absolute to rotation, and relative to the magnet. It was the microscopic or quantum domain where he recognized the endowment of energy and momentum. It was later that Shroedinger came up with the equation that could calculate energy states and state functions of the atom or molecule. However, even this discovery appeared to Einstein an external and not an internal explanation.

<sup>422</sup>Clement Greenberg, *op. cit.*, Stuckey (ed.), *op. cit.*, p. 378.

<sup>423</sup>*Ibid.* p. 70-94. Also William H. McNeill, *History of Western Civilization*, Chicago, University of Chicago Press, 1986, p. 415. Harvey, however, was not yet certain as to how blood passed from arteries to veins, since capillary action was not visible.

<sup>424</sup>Marta Poggesi, "The Wax Figure Collection in 'La Specola' in Florence", Petra Lamers-Schütze (ed.), *Encyclopeidia Anatomica*, Cologne, Taschen, 2001, p. 18 - 30.

<sup>425</sup>Barbara Maria Stafford, *Body Criticism: imaging the unseen in enlightenment art and medicine*, Cambridge, Mass., MIT Press, 1994, p. 144-160. Encyclopedias became another way of disseminating medical knowledge. There is a full mapping of *Arteries and Veins* in the *Lexicon Technicum* of 1704, and a foldout with illustrations depicting the skeleton, the nerve network as well as each organ with terms and explanations in Ephraim Chamber's section on anatomy from the *Cyclopaedia*, 1738, 1. Engraving. But also the encyclopedia went into the detail of demonstrating ways of bandaging the afflicted body in a plate from Denis Diderot and Jean Le Rond D'alembert, *Bandages and Surgical Instruments*, *Encyclopédie*, 1762-1772 II, plate 27.

<sup>426</sup>William H. McNeill, *op. cit.* p. 432-442.

<sup>427</sup>H.S. Glasscheib, *The March of Medicine*, Mervyn Saville (trans.), London, Macdonald, 1963, p. 117. Canons and muskets, and in the 19<sup>th</sup> century more sophisticated guns and rifles. Richard Gatling's 'Gatling gun', an early machine gun firing through a revolving cluster of barrels, became an effective tool of the North during the American Civil War, and made a great impression on Bismarck.

<sup>428</sup>Joseph Tyrbas de Chamberet, *Mémoires d'un Medicin Militaire: Joseph Tyrbas de Chamberet (1779-1862)*, Paris, Éditions Christian, 2002, p. 98-103. The appalling conditions in military hospitals – including dysentery and typhus – were due to already putrefied and maggot-ridden meat and rotten food fed to the soldiers who lay in already infected feces- and urine-contaminated hay, and in very close proximity to each other.

See H.S. Glasscheib, *op. cit.* p. 115-123, 116. Johannes Christian Reil wrote a report on the military hospital in Leipzig dated October 26, 1830: "I watched amputations performed with blunt knives; [...] there were no orderlies. Wounded men who could not stand had to lie in filth and urine and rot in their own excrement [...] it was impossible to brave these vapours."

<sup>429</sup>Olivier Faure, *Les Français et leur médecine au XIX siècle*. Paris, Belin, 1993, p. 241-271: Chapter VII, l'impossible hygiene.

<sup>430</sup>William H. McNeill, *op. cit.* p. 482.

<sup>431</sup>Barbara Maria Stafford, *op. cit.* p. 352. Robert Hook, in the publication, *Micrographia* of 1667, illustrated with engravings how the world appeared under a microscope.

<sup>432</sup>Lady Mary Montague Wortley brought back from Turkey, around the year 1717, the practice of inoculation for small pox: see Jacques Barzun, *From Dawn to Decadence*, New York, Perennial, Harper and Collins, 2001, p. 329. By inserting a miniscule amount of the disease under the patient's skin, Montague had demonstrated that it acted as a *shield* from the reception of the disease itself. This shifted the idea of disease caused by the *disorder amongst the humors* and focused medicine on *repelling the invaders*. *Similia similibus* medication that produced a similar effect to the patient's symptoms was one of two options that Hypocrites advised for the healing of pathologies. The other was medication that produced counter effects known as antidote. This was the primary method by Galen and was still the *modus operandi* in the eighteenth century. Samuel Hahneman (1755-1843), applying the sympathetic principle in opposition to antidote, founded the practice of Homeopathy in order to shield the wounded from contracting disease. Jacques Barzun, *op. cit.* p. 329-330.

See also H.S. Glasscheib, *op. cit.* p. 193-206. In the Hippocratic teachings, Treatise 51, he gave the doctor two choices of treating the pathological condition of a patient: either it was medicine that produced a counter effect or antidote, opposite to opposite; or it was sympathetic medicine, of like to like. Galen's method – generally applied – was concerned with the antidote to stave off the illness until the body could heal itself. The cure for Hahneman was to prescribe a medication of miniscule proportions that mimicked the symptoms, and in that opposed the use of antidotes.

<sup>433</sup>*Ibid.* p. 122-126. The success of this bandage was impressively reducing infections as infections fell to only ten percent and healing time for amputations dramatically diminished. However the carbolic acid poisoned the surgeons and was hard on the eyes.

<sup>434</sup>*Ibid.* p. 127.

<sup>435</sup>Michel Foucault, *Madness and Civilization, a history of insanity in the age of reason*, Richard Howard (trans.), New York, Random House, 1988, p. 39-64. In 1656 a decree was granted in Paris to the Hôpital Général that gave the director, appointed for life, complete control over the direction, the administration, the commerce, of police, of jurisdiction, of correction and punishment over all the poor [that included of course also the insane] of Paris, within or without the hospital. This was not a medical facility, but equipped with a semi judicial and administrative entity, with powers outside the courts, equipped with stakes, irons, prisons and dungeons. Some of the victims of operations without anaesthetics were probably among these.

<sup>436</sup>H.S. Glasscheib, *op. cit.* p. 135-141. The first successful painless operation was a tooth extraction on September 30<sup>th</sup> 1846

<sup>437</sup>*Ibid.* p. 139. It was Dr. Morton assisting Dr. Warren who performed the second operation. Under intense pressure, the composition of the anaesthetic became public, as well as its method of application, that of Morton's inhalation apparatus, and surgery without it became unthinkable, in both North America and Europe.

<sup>438</sup>Phillip Scott, *The Medical Research Novel, in English and German, 1900-1950*, Bowling Green Ohio, Bowling Green State University Press, 1992, p. 4-31, 7. The protagonist of Sinclair Lewis' novel *Martin Arrowsmith* struggles between the calling of a practicing doctor, and someone interested in pure scientific research.

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<sup>439</sup>Barbara Maria Stafford, *Body Criticism: imaging the unseen in enlightenment art and medicine*, Cambridge, Mass., MIT Press, 1994, p. 450.

<sup>440</sup>*Ibid.* p. 450. (taken from Mesmer's *Mémoires*.)

<sup>441</sup>H.S. Glasscheib, *The March of Medicine*, p. 180.

<sup>442</sup>*Ibid.* p. 180.

<sup>443</sup>Barbara Maria Stafford, *op. cit.* p. 461. (taken from Puységur's *Memoires*)

<sup>444</sup>H.S. Glasscheib, *op. cit.* p. 186.

<sup>445</sup>H.S. Glasscheib, *op. cit.* p. 183.

<sup>446</sup>Hans Joachim Schwanitz, *Die Theorie der praktischen Medizin zu Beginn des 19. Jahrhunderts*, Köln, Pahl-Rugenstein Verlag, 1979, p. 13, 53, 123. In a medical journal published in Jena, "Journals der praktischen Arzneykunde und Wundarzneykunst" 1800 – 1844. The motto for the public and the doctors alike was "*Prüfet alles – und das Beste behaltet.*" Translated, (prove everything and keep the best).

<sup>447</sup>C.D. Haagenzen and Wyndham E.B. Lloyd, *A Hundred Years of Medicine*, New York, Sheridan House, 1943. p. 186. In 1896 Röntgen and his brother-in-law at M.I.T. also performed a fluoroscope that permitted him to trace the outline of the heart, making it possible to diagnose aneurysms, and cardiac hypertrophy, as well as to scan the lungs. The curious nature of this X ray resulted in the discovery by Antoine Henri Becquerel (1852-1908) of the uranium salts that also emitted light energy. In their own search for the properties of the energy of uranium, Pierre (1859-1906) and Marie Curie (1867-1934) distilled radium, which gave an even greater light energy than uranium; in the process the structure of the atom was discovered, no longer now itself the smallest particle of matter but having a complex internal structure itself.

<sup>448</sup>Edwin Clarkee and Kenneth Dewhurst, *An Illustrated History of Brain Function*, Berkeley, University of California Press, 1972, p. 114, 115. Vicq d'Azyr (1748-1794) had found a way to preserve it with alcohol and saltpeter so that it could be sliced into thin sections and mapped. While this advanced the knowledge of the physical brain to some extent, what was primarily in question was the linkage between its physical elements and its sensory characteristics. The phenomenon of the mind, or indeed its mechanisms, could not be accounted for because the idea of psycho-physics – of perceptions, associations and the chain of mental reflexes – was then unknown. It was not until 1870 that Fritsch and Hitzig published findings in which they had "elicited movements of the contra-lateral limbs by galvanic stimulation of the cortex." In 1876 that Beard isolated what he called weakness of the central nervous system, neurasthenic, as the cause of subjective ailments. The result was that psychological disturbances were now to be explained through physical causes alone, namely a weak nervous system which needed rest and fortitude to be corrected. But until then, much ground had to be covered.

<sup>449</sup>Roger Smith, *op. cit.* p. 259. Barbara Elkeles, *Der Moralische Diskurs über das medizinische Menschenexperiment in 19. Jahrhundert*, Stuttgart, Gustav Fisher, 1996, p. 65-67, *Medizine und experimentelle Physiologie*, (1855-1880). The popularity of phrenology can be explained by its claim to finally treat and explain the unknown causes of what for centuries had been a confusion between insanity and immorality, the sheer diagnostic inability to distinguish between them.

<sup>450</sup>Roger Cooter, "Phrenology and the British Alienists, ca. 1825-1845", Andrew Scull (ed.) *Madhouses, Mad Doctors, and Madmen, The social history of psychiatry in Victorian England*, Philadelphia, University of Pennsylvania Press, 1981, p. 58-104.

<sup>451</sup>James Clerk Maxwell, *A Treatise on Electricity and Magnetism*, 3rd unabridged edition, New York, Dover Publication, 1954, Volume I and Volume II. Maxwell published the first edition in 1891. This is around the same time that Freud and Charcot are active and providing Messmer's speculation some new legitimacy.

<sup>452</sup>Georges Guillaumin, *J-M. Charcot, 1825-1893: sa vie - son oeuvre*, Paris, Masson, 1955, p. 146-164, 162. Chapt. XIV: Les Conceptions De J. Babinski sur l'hysterie. J. Babinski revised the idea in 1901 that the condition of hysteria was only emotively generated, but was rather a lack of sincere emotional reception, *une manque*. And in 1877 Charcot, looking for a word that could replace hysteria, coined the word *traumatique*.

<sup>453</sup>Barbara Maria Stafford, *op. cit.* p. 454.

<sup>454</sup>Roger Smith, *op. cit.* p. 259; see also Chapter 8, footnote 57: *Studies on Voltaire and the Eighteenth Century*, p. 525-530.

<sup>455</sup>Sigmund Freud, *Psychoanalysis: a general introduction*, New York, Washington Square Press, 1963. p. 284-296.

<sup>456</sup>H.S. Glasscheib, *op. cit.* p. 329.

<sup>457</sup>Sigmund Freud, *op. cit.* p. 360. It is not possible to make a clear distinction between the ego and sexuality, because the development of the ego instinct is not independent of the development or influence of the libido.

See also Peter Gray, *Freud: a life of our time*, New York, Norton, 1988, p. 412-413.

<sup>458</sup>Jacques Barzun, *op. cit.* p. 661.

<sup>459</sup>Sigmund Freud, *op. cit.* p. 305-306. That which is not permitted to enter into consciousness is then understood to be the repressed. "*The unconscious, the preconscious and the conscious are less prejudicial and more easily defensible than the subconscious, inter-conscious, and co-conscious.*"

<sup>460</sup>H.S. Glasscheib, *op. cit.* p. 333-351.

<sup>461</sup>Leo Bersani, *The Freudian Body: psychoanalysis and art*, New York, Columbia University Press, 1986, p. 15, 7-27. See Chapter One: Theory and Violence.

<sup>462</sup>Barbara Maria Stafford, *Visual Analogy: consciousness as the art of connecting*, Cambridge, Mass., MIT Press, 1999, p. 159.

<sup>463</sup>Jacques Barzun, *op. cit.* p. 665.

<sup>464</sup>Claude Monet, *op. cit.* p. 50.

<sup>465</sup>Clement Greenberg, "*Claude Monet: the later Monet*", Charles F. Stuckey (ed.) *Monet: a retrospective*, Paris, Beaux Arts Editions, 1985, p. 375-381.

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- <sup>465</sup>Henry Vidal, "France-Marseille: Remembering Claude Monet February 19, 1947", Charles F. Stuckey (ed.) *op. cit.* p. 349.
- <sup>466</sup>Claude Monet, *op. cit.* p. 66.
- <sup>467</sup>Joachim Pissarro, "Monet at the Art Institute of Chicago", *Apollo*, Dec. 1995, Volume 142, p. 62-65. The exhibition "Claude Monet 1840 – 1926" was curated by Charles Stuckey.
- <sup>468</sup>Gaston Bachelard, *The Poetics of Space*, Maria Jolas (trans.), Boston, Beacon Press, 1997, p. 216.
- <sup>469</sup>Karen Wilkin, "New Light on Corot", *The New Criterion*, November 1991, p.13, 9-15.
- <sup>470</sup>Daniel Wildenstein, *Monet: or, the triumph of Impressionism*, p. 180-182.
- <sup>471</sup>Michael Hoog, *op. cit.* p. 83.
- <sup>472</sup>Karen Wilkin, "Claude Monet in Chicago", *The New Criterion*, November, 1995, p. 53, 50-54.
- <sup>473</sup>Hermonine de Almeida, *Romantic Medicine and John Keats*, New York, Oxford University Press, 1991, p. 263. Pain is the prerequisite to a greater life intensity.
- <sup>474</sup>Robert Gordon and Andrew Forge, *op. cit.* p. 241.
- <sup>475</sup>Virginia Spate, *Claude Monet: life and work*, New York, Rizzolli, 1992, p. 274.
- <sup>476</sup>H.S. Glasscheib, *op. cit.* p. 185-187.
- <sup>477</sup>Joachim Pissarro, "Monet at the Art Institute of Chicago", *Apollo*, Dec. 1995, Volume 142, p. 63.
- <sup>478</sup>*Ibid.* p. 63.
- <sup>479</sup>Steven Z. Levine, *op. cit.* p. 127.
- <sup>480</sup>François Thiébaud-Sisson, "Le Temps: About Claude Monet, January 8, 1927", Charles F. Stuckey, (ed.) *op. cit.* p. 345-346. Rimbot, Monet said, before working in the dark – in the style of Rembrandt, had produced charming decorative paintings.
- <sup>481</sup>Kevin Newmark, "Traumatic Poetry: Charles Baudelaire and the shock of laughter", *American Imago*, Vol. 48, No. 4, p 517-518, 515-538. In reference to Freud from *Beyond the Pleasure Principle*.
- <sup>482</sup>Henry Vidal, *op. cit.* p. 349. Charles F. Stuckey, (ed.) *op. cit.* See also Martin Bailey, *Portrait of an English Artist*, *Apollo*, October, 1994, No. 140, p. 46-47. This portrait painted by Monet of this young English artist in 1884 looks remarkably like a younger Monet, sporting a bushy beard. Monet's *Self-Portrait* of 1917 which hangs today in the Galerie du Jeu de Paume, Musée de Louvre, Paris, most resembles the vision of Monet in the clouds.
- <sup>483</sup>René Descartes, *op. cit.* p. 127. Meditation VI.



- <sup>484</sup>Claude Monet, *op. cit.* p. 8.
- <sup>485</sup>Robert Gordon and Andrew Forge, *op. cit.* p. 240-241.
- <sup>486</sup>Richard Schiff: "John House. Monet: nature into art," *The Art Bulletin*, March 1991, Volume LXXIII Number I, p. 151, 149-156.
- <sup>487</sup>Lucien Descaves, "At Home with Claude Monet, August 25, 1920", Charles F. Stuckey (ed.) *op. cit.* p. 277-279.
- <sup>488</sup>Duc de Trévis, *op. cit.* Charles F. Stuckey, (ed.) *op. cit.* p. 319, 318-341.
- <sup>489</sup>Eric Gibson, *op. cit.* p. 105, 104-107.
- <sup>490</sup>Nicolas Wadely, *op. cit.* p. 48, 47-50.
- <sup>491</sup>Michel Feher, Ramona Naddaff and Nadia Tazi (ed.), *Fragments for a History of the Human Body*, New York, Zone, 1990, Volume 2, p. 397. See Paul Valéry, "Some simple reflections on the body." Note 9.
- <sup>492</sup>William Seitz, "Monet and Abstract Painting", *College Art Journal*, Fall 1956, p. 368, 367-374.
- <sup>493</sup>See his *Monet, Narcissus, and Self-Reflection: the modernist myth of the self*.
- <sup>494</sup>Steven Z. Levine, "Virtual Narcissus; On the Mirror Stage with Monet, Lacan, and Me", *American Imago*, Vol. 53, No. 2, 1996, p. 97, 91-106.
- <sup>495</sup>James Elkins, *op. cit.*, p. 17. See also Marc Elder, "A Giverny, Chez Claude Monet, 1924", Charles F. Stuckey, (ed.) *op. cit.*, p. 304-305.
- <sup>496</sup>Jennifer L. Shaw, "Monet", *Art Journal*, Fall, 1995, p. 107-110. The question raised is whether in the late nineteenth century the masculine model of self-reflection and creativity was opened up towards a more feminine world view by the early modernist masters, such as Monet.
- <sup>497</sup>*The Heritage Illustrated Dictionary of the English Language*, Boston, Houghton Mifflin, 1979, vol. 2, p. 902.

## End notes

## Conclusion

<sup>1</sup>Daniel C. Dennett, *Freedom Evolves*, New York, Viking, 2003, p.45.

<sup>2</sup>*Ibid.* p. 259.

<sup>3</sup>Heinrich Wölfflin, *Principles of Art History: the problem of the development of style in later art*. M.D. Hottinger (trans.), New York, Dover Publications, 1950, p. 13-16.

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<sup>4</sup>*Ibid.* p.13.

<sup>5</sup>Bernhard J. Baars, *In the Theatre of Consciousness*, New York, Oxford University Press, 1997, p. 86-89.

<sup>6</sup>Akeel Bilgrami, *Belief & Meaning*, Oxford, Blackwell, 1994. Chapter I: *Belief Meaning and the External World* 1, p. 1–14. Chapter II: *The Unity of Intentional Content*, p. 15–63. "External items that fix concepts and give meaning to terms are always mediated by other beliefs... I see the unity of content, as I intend it, as only possible if one believes in the irreducibility of the mental."

<sup>7</sup>Terry Eagleton, *Literary Theory: an introduction*, Oxford, Blackwell, 1983, p. 128.

<sup>8</sup>David Dobbs, "A Revealing Reflection", *Mind: Scientific American*, April/May 2006, p. 22–27.

<sup>9</sup>David Biello, "Searching for God in the Brain", *Mind: Scientific American*, October/November, 2007 p. 39-45.

**APPENDIX A**

**Illustrations**

**CHAPTER I**

**Illustrations**



Figure 1.1 View from the entrance of the *Ixion* Room in the House of the Vettii, 79 A.C.E., Pompeii.



Figure 1.2 Archeological Plan of Pompeii. The House of the Vettii is marked insula number 15. (Taken from R. Ettienne, 1992.)



Figure 1.3 In Pompeii all the houses have adjoining walls. This is a view looking along the Via Dei Vettii with the entrance visible on the right to the House of the Vettii, 79 A.C.E.

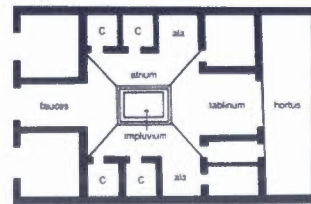


Figure 1.4 Plan of a typical Roman House. (Taken from J.R. Clarke, 1991.)

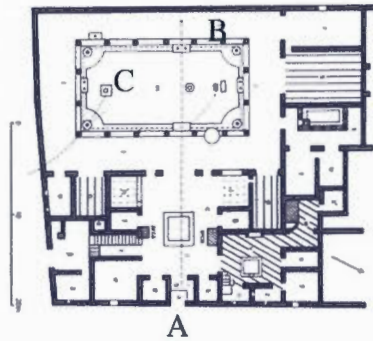


Figure 1.5 Plan of the the House of the Vettii, 79 A.C.E., with the central axis drawn from the Fauces or entrance [A] through the Hortus [C] to the Collonnade beyond [B]. ( Taken from J.R. Clarke, 1991.)

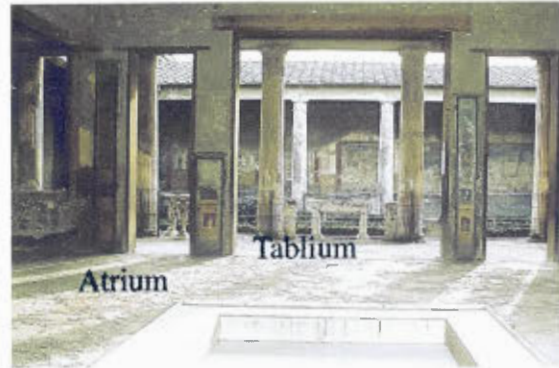


Figure 1.6 This axis seen from the point of view of the visitor entering through the Fauces and gazing across the Atrium past the Tablium towards the large collonnaded Peristyle Garden or Hortus. (Taken from Guzzo and Foglia, 1998.)



Figure 1.7 Looking across the Peristyle garden or Hortus towards the women's apartment to the right of which the *Ixion* Room is located.



Figure 1.8 Entrance to the House of the Vettii, 79 A.C.E. from the Via Dei Vettii.



Figure 1.9 View into the interior – Atrium, Tablium, Perystyle with Hortus – from the Fauces, or entrance hall of the House of the Vettii, 79 A.C.E. A fresco of Priapus, symbol of wealth, holds a scale filled with fruit.. (Taken from, *How to visit Pompeii* , Edizioni Flanga, n.d.)



Figure 1. 10 View from the Atrium looking towards the entrance. On the left hand side of the entrance is the food storage, adjacent to which on the adjoining wall is the entrance to the kitchen. On the right hand side of the entrance is the porter's gate.

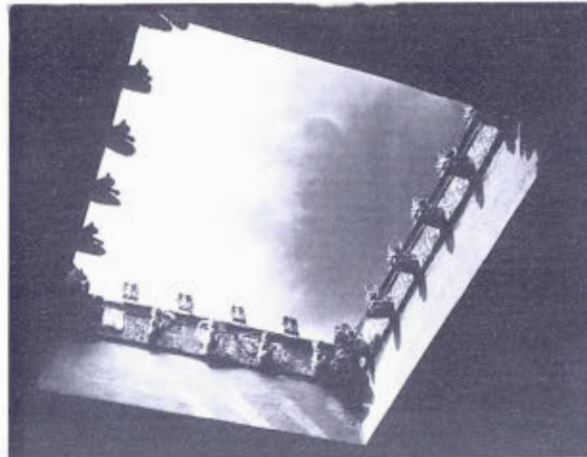


Figure 1.12 The Compluvium or opening in the roof of the Atrium of the House of the Vettii, 79 A.C.E. is located directly above the Impluvium. (Taken from Wheeler, 1996.)



Figure 1. 11 The Laarium or place of offering to the household gods overlooks the Impluvium in the smaller Atrium of the Service Area. (Taken from Guzzo and Foglia, 1998.)



Figure 1.13 Looking from the east side of the Impluvium towards the Tablium or reception area, with the Hortus as a back drop.



Figure 1.14 View from the south end of the Hortus surrounded by the Peristyle Collonnade.



Figure 1.15 The Tablium is located on the right side of the Hortus. Looking towards the north end of the Hortus and towards the Women's Apartments.

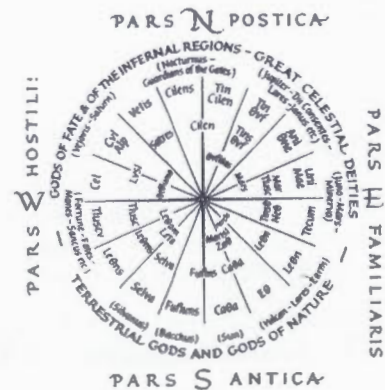


Figure 1.16 Exaggerated and graduated spaces between pillars to increase the sense of depth of the central axis.



Figure 1.17 The distant pillars are more narrowly spaced than would be the case with normal perspectival projection.

Figure 1.18 Etruscan circle of Divination. (Taken from J.R. Clarke, 1991.)





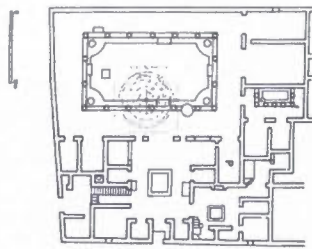


Figure 1.19 Showing the relationship between the Etruscan circle of Divination and the Roman House centred on the Tablinum and Hortus. (Taken from L'Erma di Bretschneider, 1998.)

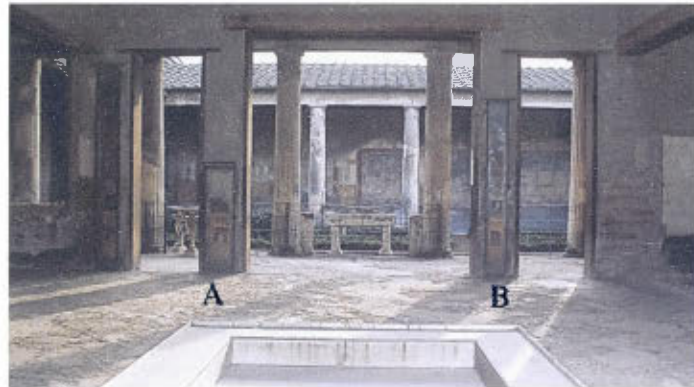


Figure 1.20 I propose that the two portraits on the columns as one enters the reception area or Tablinum, marked A and B on the illustration are of the Vettii brothers, Aulus Vettius Conviva and Aulus Vettius Restitutus. (Taken from L'Erma di Bretschneider, 1998.)

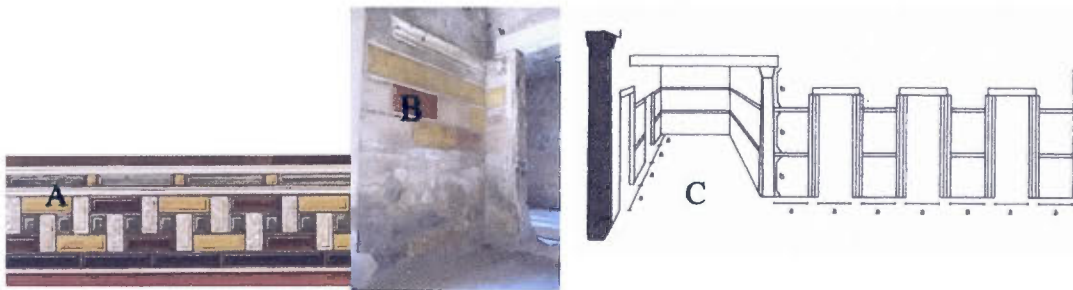


Figure 1.21 First style (A) wall decorations 3rd to 1st century B.C.E. (Schema taken from J. Berry 1998.) An original First Style wall (B) photographed by myself in Pompeii. First Style system of walls were built with blocks of stone as a way of unifying the whole space. (Taken from J.R. Clarke, 1991.)

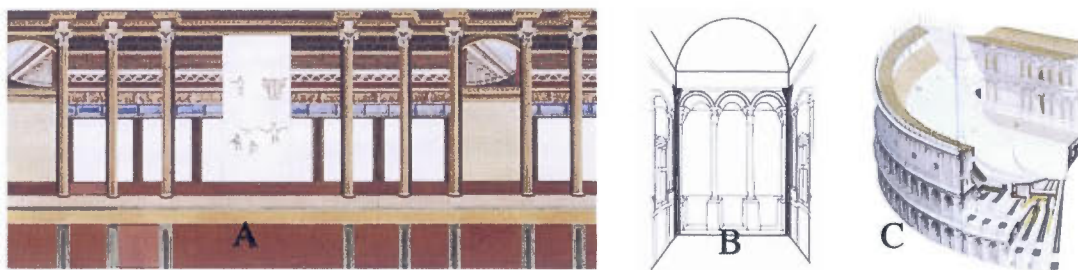


Figure 1.22 Second Style wall decoration, 1st century B.C.E. (A). (Taken from Berry, 1998.) Individual architectural perspectives differentiate spaces in this Second Style room (B). (Taken from J.R. Clarke, 1998.) The Theatre of the Roman Marcellus, 13 B.C.E. (C), dedicated to Augustus, shows a two-tiered stage set similar to the idea of different registers in the *Ixion* Room decorations. (Taken from Connolly and Dodge, 1998.)



Figure 1.23 Third Style decoration, end of 1st century B.C.E. (Taken from Berry, 1998.) Added to the Third Style is the large central panel that becomes the mythological panels in the *Ixion* Room decorations.

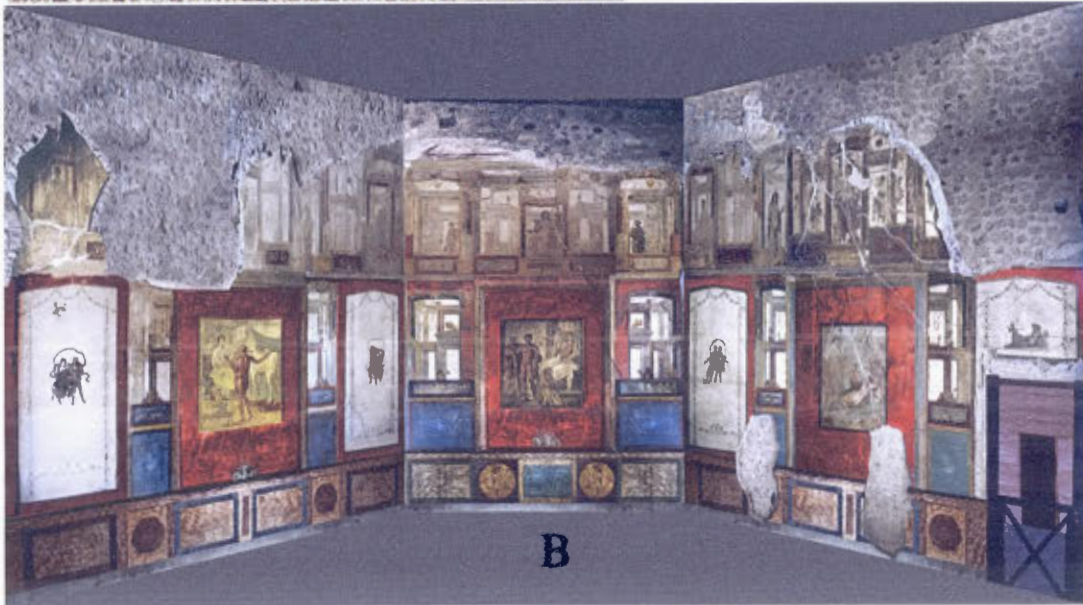
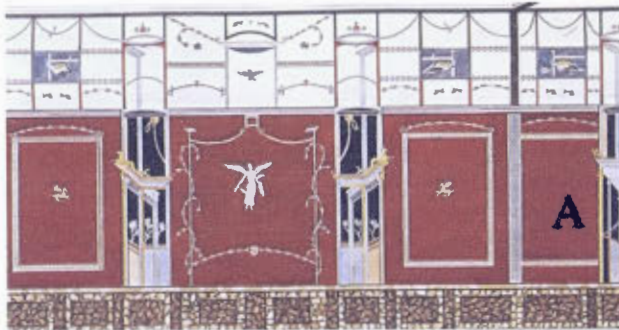


Figure 1.24 The Fourth Style has many of the characteristics of the First, Second and Third Style. Compare the schema of the Fourth Style 1st century A.C.E. (A) (Taken from Berry, 1998.) with the reconstruction (B) of the *Ixion* Room decorations, 79 A.C.E.



6.32m

4.64 m

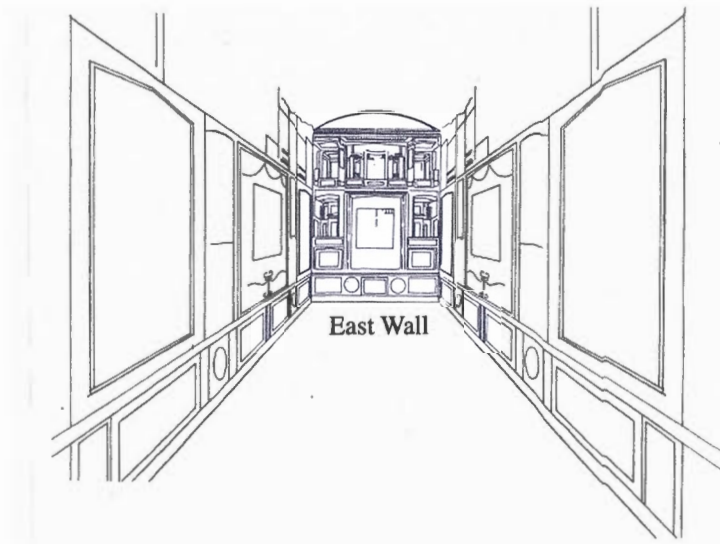
Figure 1.25 The south wall is located on the immediate right as one enters the *Ixion* Room from the entrance on the west side. The small doorway with the gate on the right side of the south wall leads to the Atrium. It is from this doorway that food was brought into the dining room. The image of this wall is a reconstruction from a number of photographs taken by myself. As you can see, this wall is no longer completely intact.



6.32 m

4.64m

Figure 1.26 The north wall is to the immediate left as one enters the *Ixion* Room from the west side. This wall is covered entirely with wall decorations. This wall is a reconstruction from a number of photographs taken by myself. As you can see, this wall is no longer completely intact.



A schema of the *Ixion* Room as seen from the west entrance.

Figure 1.27 Overview of the *Ixion* Room in the form of a line drawing indicating decorative elements, emphasizing their symmetry on the north wall, left, and on the south wall, right.

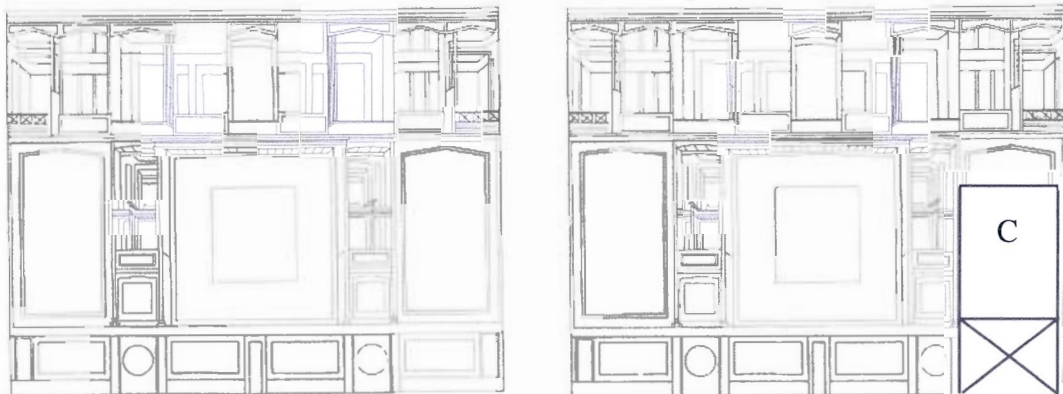


Figure 1.28 The schema of the north wall (A) and south wall (B) to demonstrate the symmetrical nature of the architectural features represented on both walls. The only exception is the doorway (C), which interrupts the symmetry indicated by the superimposed rectangle.

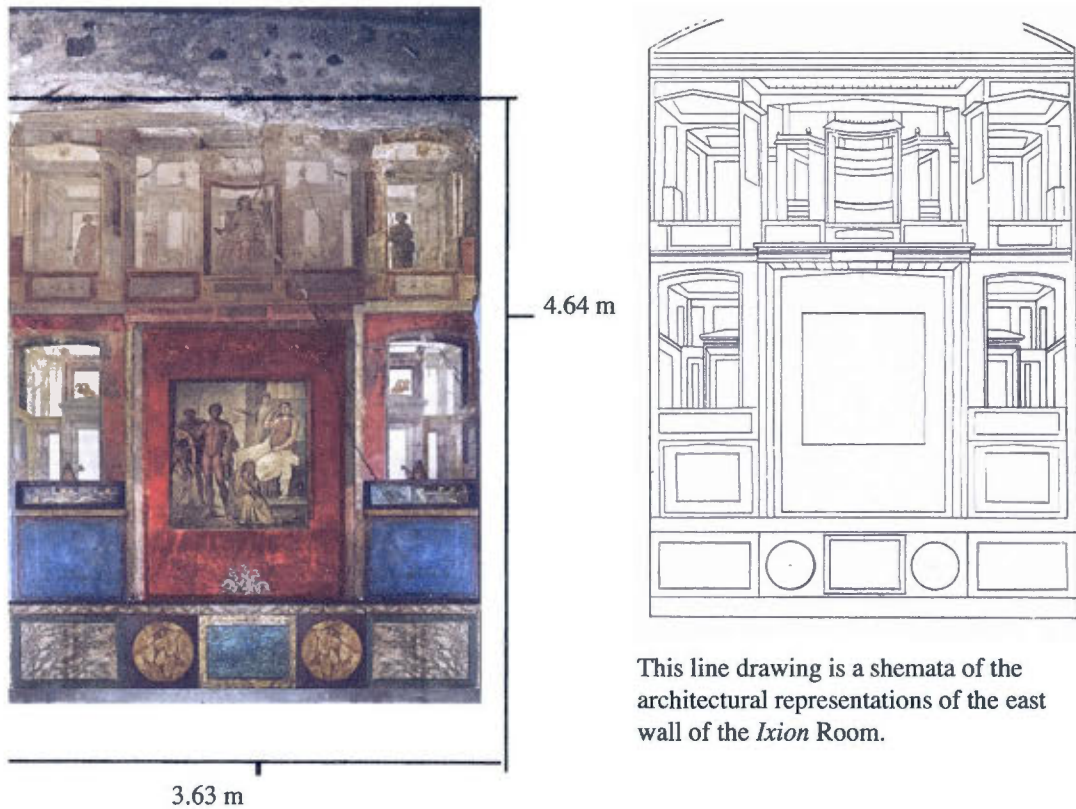


Figure 1.29 The image of the east wall is a reconstruction from various photographs.

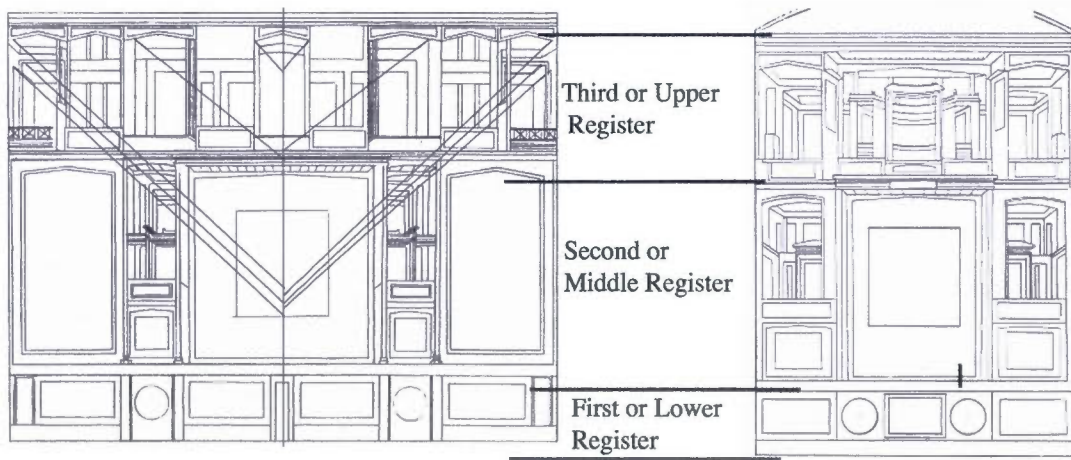


Figure 1.30 schematic drawing of north, south and east wall indicating registers and lines of convergence



Figure 1.31 Overview of all three decorated walls of the Ixion Room, showing all three registers and how they interrelate. This image is reconstructed from different photographs. The room itself is narrow. Opening up the room like this gives a privileged point of view in order to see all three sides simultaneously.



Figure 1.32 First (Lowest) Register, First Style wall decoration, north east corner of the *Ixion* Room. (Taken from Krauss and von Matt, 1973.)

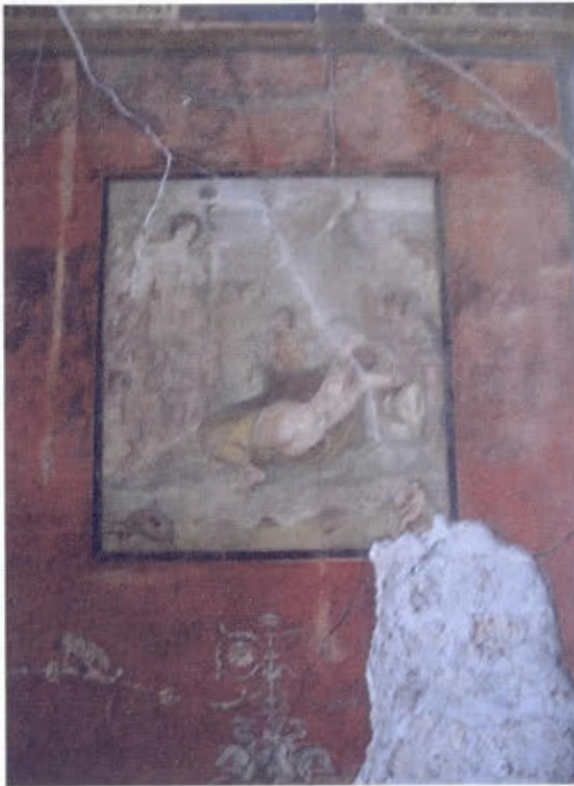


Figure 1.33 South wall, Second ( Middle) Register.



Figure 1.34 North wall, Second (Middle) Register.

Figure 1.35 Mythological panel on south wall: Dionysus discovering Ariadne.



A



B

Figure 1.35 A detail of Dionysus discovering Ariadne with a tambourine resting on the ground in the front left corner of the scene.



Figure 1.36 Below the mythological panel on both the north and south wall is a decorative element of hippocampi or sea-horses, and on the branch of a vine there is Zeus in the form of a spotted panther.





Figure 1.37 The head is identified as Athena and floats on the centre of all four blue panels below each of which there is a battle scene with ships.



Figure 1.38 Naval battle scene, south wall, west end.



Figure 1.39 Naval battle scene, south wall, east end.



Figure 1.40 Naval battle scene, north wall, east end. (Taken from L'Erma di Bretschneider, 1998.)



Figure 1.41 Naval battle scene, north wall, west end.



Figure 1.42 South wall, west end: a basket, a theatrical mask and a severed phallus located above a naval battle scene.



Figure 1.43 North wall, west end: a basket a theatrical mask and a severed phallus located above a naval battle scene.



Figure 1.44 North wall, east end: a basket a severed phallus and a maenad-Dionysian priestess with ivy and flowers in her hair above a naval battle scene.



Figure 1.45 South wall, east end: a basket, a severed phallus and an old sleeping satyr with closed eyes and open mouth above a the naval battle scene.



Figure 1.46 Representation of window, north wall, west end.



Figure 1.47 Representation of window, north wall, east end.



Figure 1.48 Representation of window, south wall, west end.



Figure 1.49 Representation of window, south wall, east end.



Figure 1.50 White panels with a floating female figure – Feronia – and the satyr Erylus, a male figure, on the north wall, west end.



Figure 1.51 White panels with a floating female figure – Feronia – and the satyr Erylus, a male figure, on the north wall east end.



Figure 1.52 White panels with a floating female figure – Feronia – and a male figure, the satyr Erylus, on the south wall, east end.



Figure 1.53 White panels with floating female figure – Feronia – and the satyr Erylus, a male figure, on the south wall, west end.

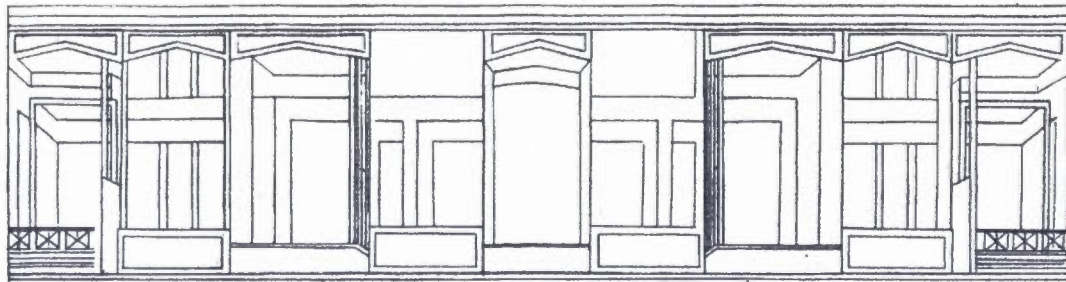


Figure 1.54 Outline of the architectural features as they would have appeared in the original complete Upper Register of the north wall and south wall.



Figure 1.55 North wall, Third (Upper) Register as it appears today.



Figure 1.56 South wall, Third (Upper) Register as it appears today.



Figure 1.57 Detail of a figure on the north wall, Upper Register, west end.



Figure 1.58 Deatail of north wall, Upper Register, east end. The base on which the figure rests has a projective side on the left and gives the appearance of projecting out into space.



Figure 1.60 Detail of south wall, Upper Register, east end. Both the balcony with the male figure and the base that the female figure stands on appear to have projective sides.



Figure 1.59 Due to the degradation of the wall decoration, it is difficult to verify in detail the balcony of the male figure.



Figure 1.61 The base beneath Dionysus' throne is completely frontal and has no projective sides.

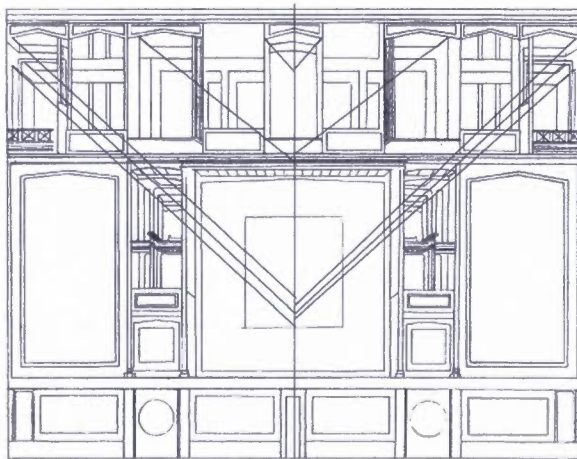


Figure 1.62 This drawing of the decorative architectural schema of both the north and south walls shows that the extended projections of the architectural features terminate on the central vertical axis.



Figure 1.63 Female figure flanking the god Apollo. She stands on a base that clearly projects out in front of the entablature below, giving in this representation the illusion of projecting out into space beyond the actual wall's surface.





Figure 1.64 The god Dionysus sitting on his throne at the centre of the south wall in the Third or Upper Register .



Figure 1.65 The image of Apollo, badly degraded, sitting on his throne at the centre of the north wall, Upper Register.



Figure 1.66 Apollo sits directly above the mythological panel of Daedalus and Paspheia on the north wall.



Figure 1.67 Female figure flanking Apollo on the north wall (A). Female figure flanking Dionysus on the south wall (B).



Figure 1.68 a A male figure (actor) wearing a blue mantle on the north wall, Upper Register. A male figure (actor) A on the east wall, Upper Register, carrying large thyros and looking towards Fortuna at the centre.

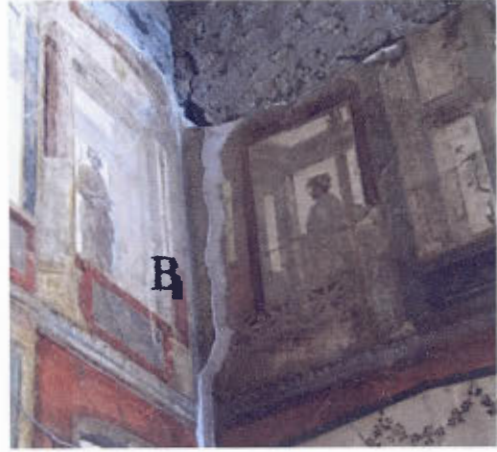


Figure 1.68 b A male figure (actor) on the south wall facing the east wall, Upper Register. A male figure (actor) B on the east wall facing into the centre towards Fortuna.



Figure 1.69 East wall of the *Ixion* Room, Upper, Middle and Lower Registers.



Figure 1.70 Middle Register, east wall..



Figure 1.72 The top of the entablature with its coffered soffit framing the Ixion myth.



Figure 1.71 Entablature framing the myth of Ixion on the east wall.



Figure 1.73 Bare-torsoed Triton, son of Poseidon, flanked by Hippocampus or sea horses.



Figure 1.74 Still life, east wall left of centre.



Figure 1.75 Still life, east wall right of centre.



Figure 1.76 Window above still life, east wall left of centre.



Figure 1.77 Window above still life, east wall right of centre.



Figure 1.78 The lintels and jambs in the representations of the windows on the north and east walls do not, from this angle, connect seamlessly.



Figure 1.79 The lintels and jambs in the representation of the windows on the south and east walls do not, from this angle, connect seamlessly.



Figure 1.80 The architectural features of the representations of the windows on the north, south and east walls give a sense of pictorial spatial continuity as seen from the centre of the west entrance.



Figure 1.81 The decorations of the Third (Upper) Register of the east wall (A) and a detail of Fortuna sitting on her throne at centre (B).



Figure 1.82 East wall with implicit horizon line (B) and vertical axis (A). Architectural features appear to converge on the vertical axis.

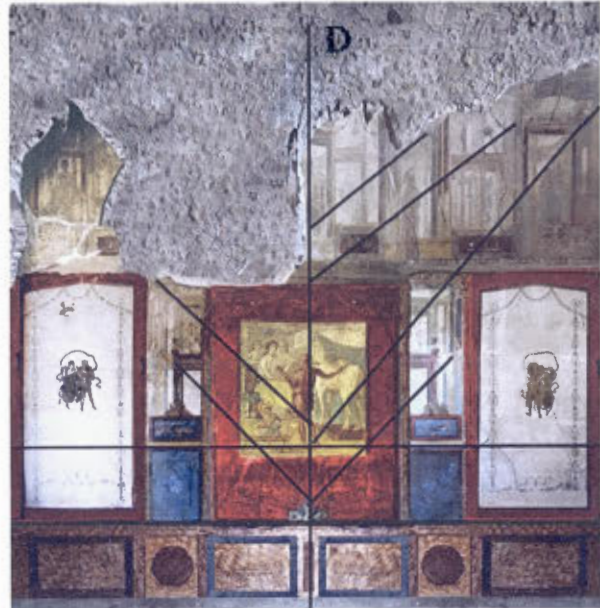


Figure 1.83 North wall with implicit horizon line (B) and vertical axis (D). Architectural features appear to converge on the vertical axis.



Figure 1.84 South wall with implicit horizon line (F) and vertical axis (E). Architectural features appear to converge on the vertical axis.



Figure 1.85 The mythological panel of Daedalus discovering Ariadne is flanked, like the other two mythological panels, by the representations of windows. This creates a sense of infinite depth behind the mythological panel, as it is confined by the shallow space of the entablature.

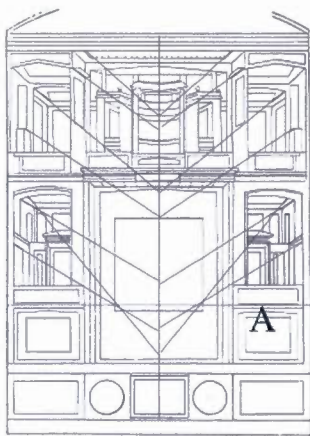


Figure 1.86 Schemata of the east wall demonstrating how projective angles of architectural representations converge on the central axis. Note implicit Horizon (A).



Figure 1.87 Possible multiple points of convergence on the central axis from the architectural features on the east wall.



Figure 1.88 Progressive incline of angles of windows.



Figure 1.89 An illustration of typical Roman diners reclining on couches. (Taken from Connolly and Dodge, 1988.) This arrangement would be similar to the diners in the *Ixion Room*.



Figure 1.90 The projective lines that create the representation of the aediculae in the Upper Register of the east wall converge onto the centrally placed figure of Fortuna.



Figure 1.91 The mythological scene of Ixion (Taken from Krauss and von Matt, 1973.) does not indicate the projective nature of a ground plane, which is cut off by the location of shallow vertical planes. The only diagonal relationships are those of the cast of characters that perform the mythological narrative.

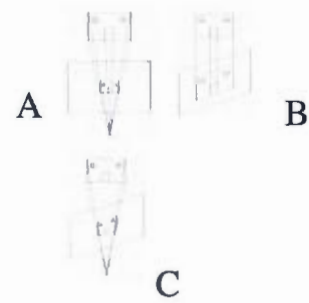


Figure 1.92 Three projective systems (taken from M. Hagen, 1986) Similarity Projection (A), Affine Projection (B), Projective Projection (C).



Figure 1.93 Standing in the centre of the *Ixion* Room, the lintel and jambs of the represented windows at the north east corner do not establish a smooth continuity (A). However, once I placed myself in the position of the diner (from which position I also took the photograph) the transition of lintels and



details of above windows (A) and (B).





Figure 1.94 Mirror image windows appear as though they continue behind mythological panel. This is true for the east, north and south walls.



Figure 1.95 Left-represented window, detail of east wall.



Figure 1.96 Left-represented window, detail of south wall.



Figure 1.97 Still life and mask, left of centre, east wall.



Figure 1.98 Still life and mask, right of centre, east wall.



Figure 1.99 Successive pictorial space of Ixion mythological scene on the east wall. (Taken from L'Erma di Bretschneider, 1998.)



Figure 1.100 Naval battle, north wall, right of centre.



Figure 1.101 Naval battle south wall, right of centre.



Figure 1.102 Naval battle, north wall, left of centre.



Figure 1.103 Naval battle, south wall, left of centre.



Figure 1.104 Head of Athena floating on a blue field



Figure 1.105 Detail of head of Athena, floating on a blue field.



Figure 1.106 Fortuna gazes at Dionysus, Dionysus at Apollo, and the actors on the north and south east corner gaze at the actors on the east wall. The actors on the east wall gaze at Fortuna, and Nephele gazes towards Hermes in the Ixion myth.

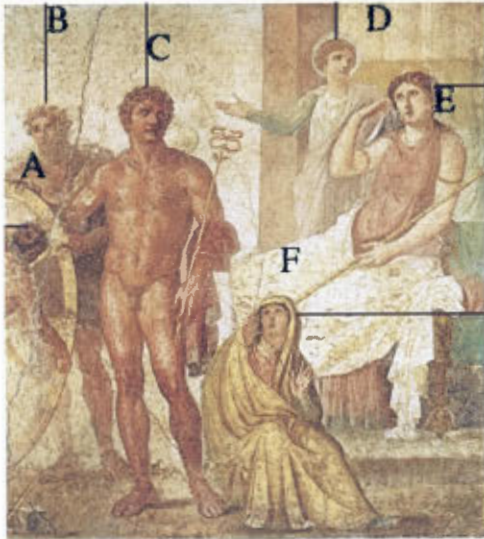


Figure 1.107 (A) Ixion tied to the wheel of fire; (B) Hephaestus, god of fire; (C) Hermes, messenger of fate; (D) Iris, incarnation of Zeus; (E) Hera sitting in throne; (F) Nephele, Ixion's lover or phantom Hera. ((Taken from L'Erma di Bretschneider, 1998.)



Figure 1.108 Daedalus and Pasiphaea. (A) Woman behind Pasiphaea in a state of anxiety; (B) Pasiphaea; (C) Poseidon; (D) Daedalus; (E) The sacred Bull; (F) Icarus.



Figure 1.109 Dionysus discovering Ariadne; (A) Dionysus; (B) Theseus's ship is sailing away; (C) Hypnos, god of sleep; (D) Satyre lifting cloth; (E) Ariadne asleep.



A



B

Figure, 1.110 A Ponzo illusion on both north east corner (A, figure 1.109) and south east corner (B, figure 1.110) becoming at once concave and convex.

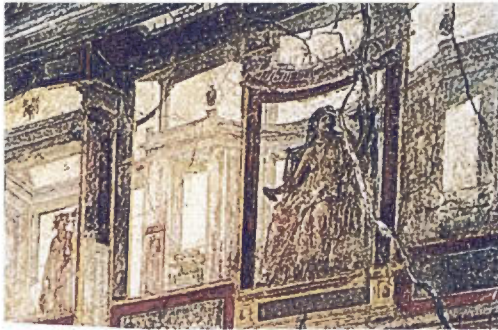


Figure 1.111 Fortuna, as seen here, appears to have diminishing detail of her robe on the left as does the actor's toga. (Taken from Krauss and von Matt, 1973.)



Figure 1.112 The sensual and material presence of the decorations defines the philosophical character of the *Ixion* room.



Figure 1.113 Two actors in the north east corner of the *Ixion* Room



Figure 1.114 Two actors in the south east corner.

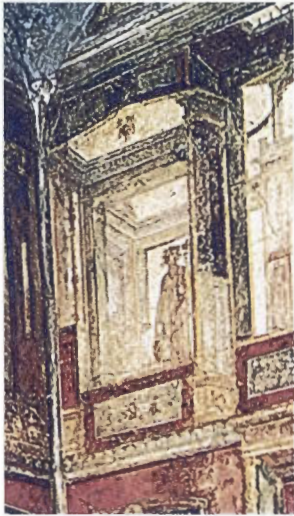


Figure 1.115 The space occupied by the actor is two rooms deep. (Taken from M. Krauss and von Matt, 1973.)



Figure 1.116 The position of the two actors is clearly a considerable distance behind Fortuna, emphasizing pictorial depth, which is also affirmed by their difference in size to that of Fortuna, who is seated and much larger at the front.



Figure 1.117 The representation of the various kinds of marble are richly coloured and textured.

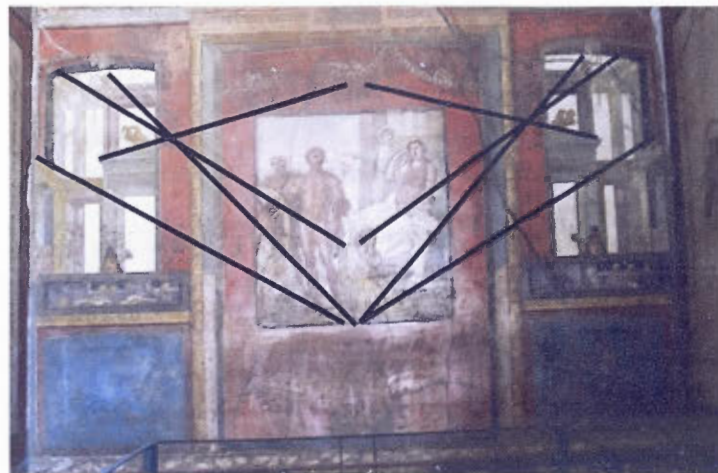


Figure 1.118 The architectural projections, as in the case of the other two walls, have the effect of focusing attention onto the mythological scene, in this case Ixion tied to the wheel of fire.



Figure 1.119 Second Style wall decorations from the House of Augustus on the Pallatine in Rome. (Taken from Connolly and Dodge, 1998.)



Figure 1.120 Triton flanked by hippocampus emerging at the bottom edge of the red field that frames the Ixion myth on the east wall.

Figure 1.121 The head of Athena emerges from the blue field located beneath the naval battle on the north west corner.



Figure 1.122 Apollo located on the north wall, Upper Register, very badly degraded, only partial image.



Figure 1.123 Fortuna, best preserved of the three gods, Upper Register, east wall.



Figure 1.124 Dionysus, visibly sitting on a throne at centre in the Upper Register on the south wall.



Figure 1.125 Triads of gods as seen by the guests (A) as they enter the dining room.

A

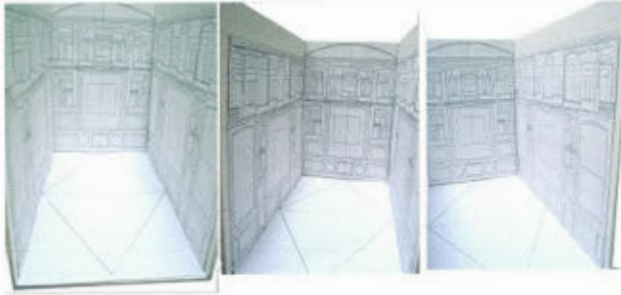


Figure 1.126 A three-dimensional model of the *Ixion* room. The floor is divided into two equal parts constructed of more or less two equilateral triangles. The visitor enters from the open, or west, side.



Figure 1.127 An enclosed niche found in the Domus Aurea in Rome of a landscape with what appears to be either a model of the emanation of sunlight or vision as understood at the time of the Second Style. (Taken from Iacopi, 1999.)



Figure 1.128 A mosaic known as the *Four Seasons*, now located in the Glyptotek in Munich, Germany, that demonstrates the idea of constructing a deep space through projective, converging details of a frame. (Taken from Kern, 1938.)



Figure 1.129 *Four Seasons* mosaic: detail.

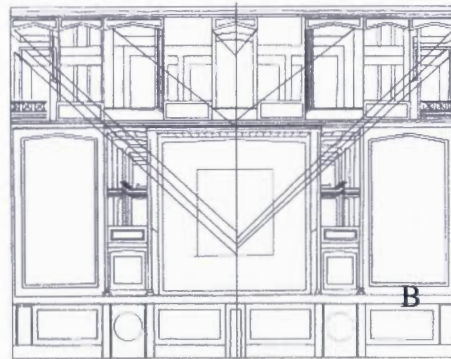


Figure 1.131 Representation of window seen from a reclining position. It connects lintel and jambs successfully.

Figure 1.130 Perspectival diverging angles projecting from the eye(A) as vision was understood at the time of the *Ixion* Room decorations. Instead of thinking of architectural features *converging* from the point of the experience of the guest, they can be understood to *diverge* in the context of real space (B).

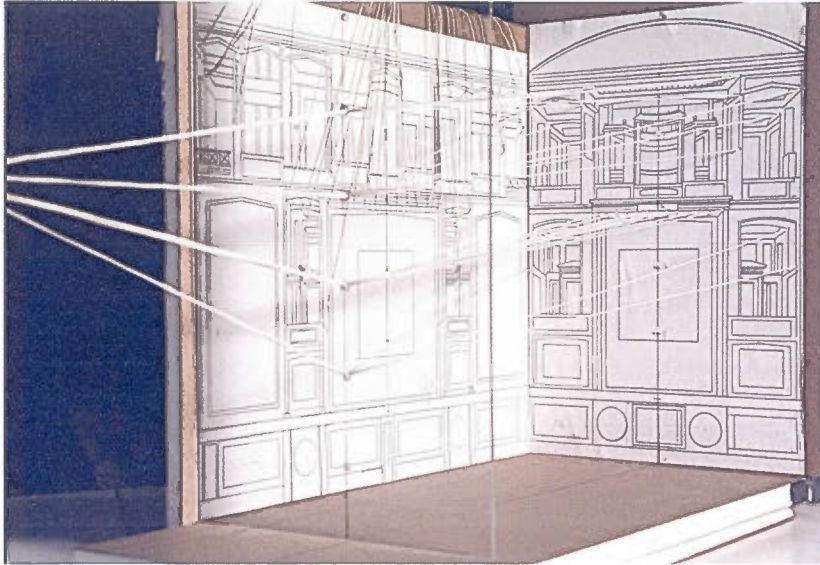


Figure 1.132 Strings are attached to different points of termination on the architectural features. They are then drawn through a small hole in a piece of plastic as though the hole were the point of origin of sight in the eye. Therefore, the lines emanating from the eye construct the angles of the architectural representations, in this case the east wall. Along the vertical axis there are a number of points of emanation in order to construct all the architectural representations on all three registers.

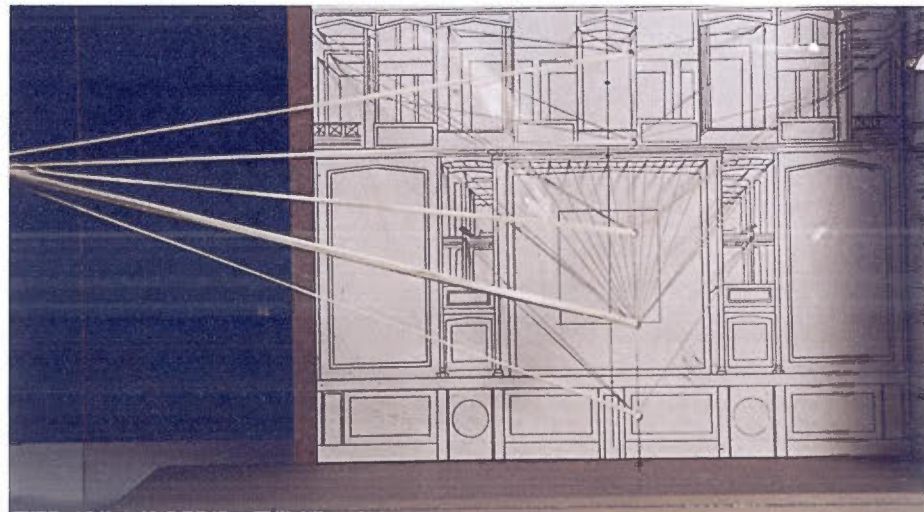
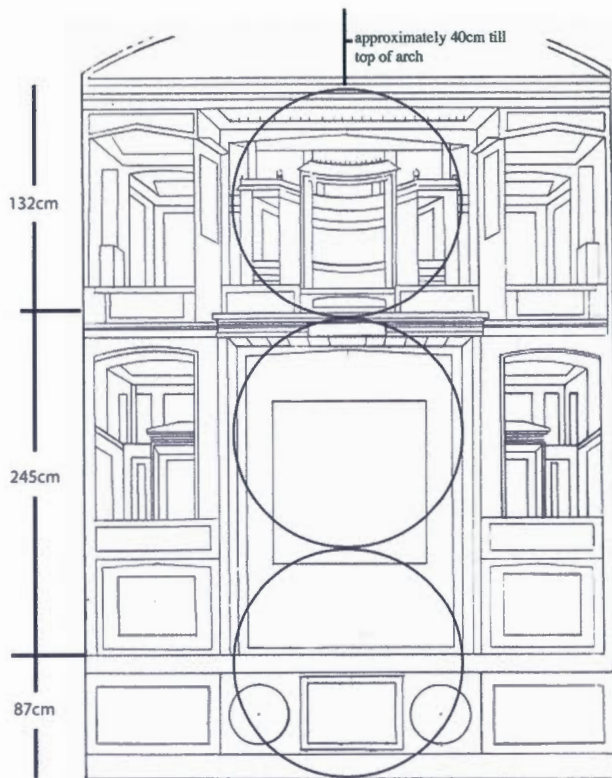


Figure 1.133 The piece of plexiglass with holes is perhaps more visible against the drawing of the north wall. It is quite surprising how well the emanating strings correspond to the represented angles. It is however, important to find the right points on the vertical axis.,





A



B

Figure 1.134 The Vitruvian ideal for a man's height so that of the circle is approximately twice the diameter (87 cm) or 174 cm. As demonstrated, the height of the *Ixion* Room to the height of the third register is approximately three times a man's height. The actual dimensions of the *Ixion* Room are very close to the Vitruvian ideal. The arch completed, at its apex would be about 44 cm or about half of the diameter. The diagrammatic illustration (A) at the top is seen against the virtual reconstruction. Because of the problem of height in the photographic reconstruction (B), there are small discrepancies.

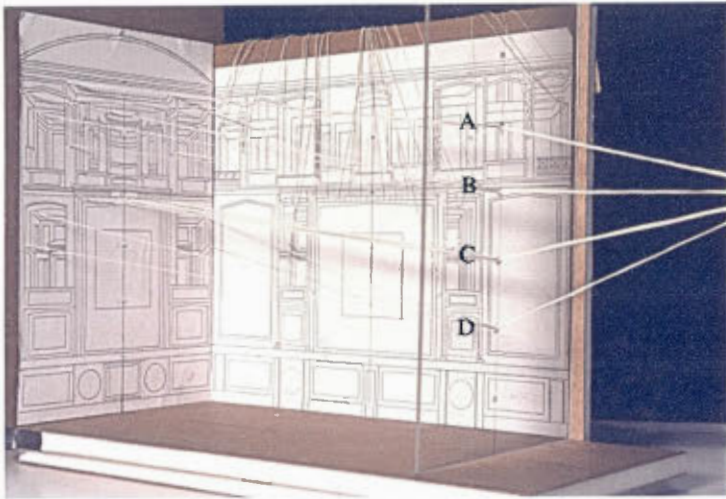


Figure 1.135 Equally spaced points along the vertical axis on the plexiglass take the place of the west wall or point of entry. From points (A), (B), (C) and (D) strings – like rays of vision – diverge to construct the angles of the architectural representation on the east wall.

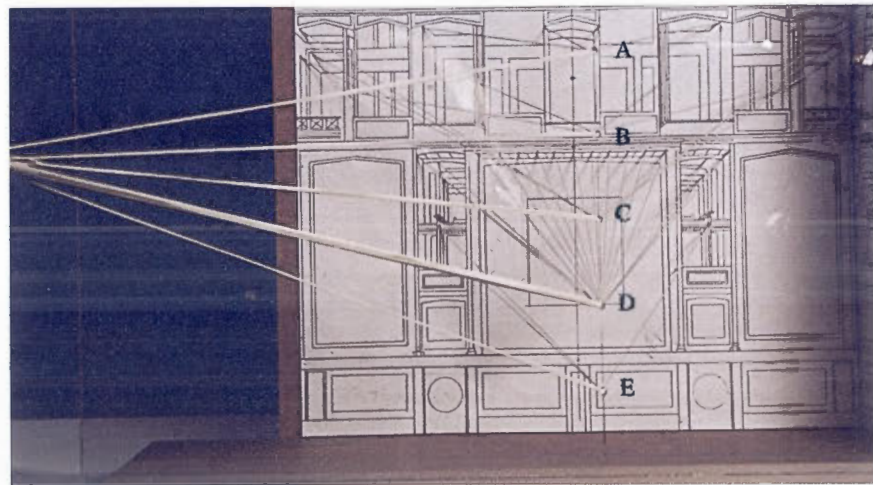


Figure 1.136 Equally spaced points along the vertical axis of the plexiglass take the place of the south wall. From point (A), (B), (C), (D) and (E) strings – like rays of vision – diverge to construct the angles of the architectural representation of the north wall.

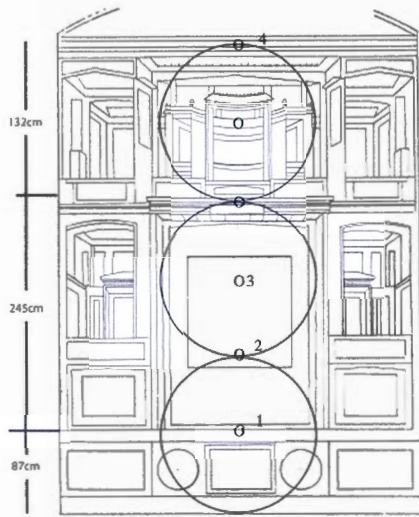


Figure 1.137 Along the vertical axis of the three circles are six perforations. The first is at approx. 87.5 cm, the second at 175 cm, the third at 263cm, the fourth at 350.5 cm 438cm. This is only about 26cm from the measures given for the height of the room. How accurate the measurement is I could not verify. But I am satisfied with their proximity.

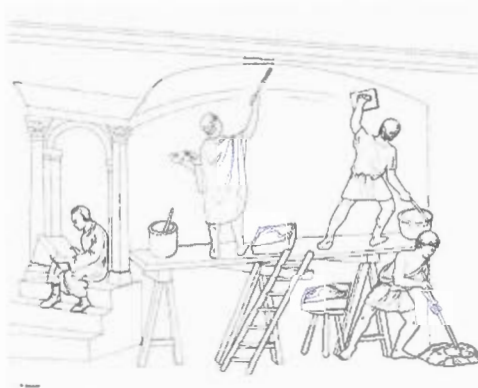


Figure 1.138 Illustration of Roman decorators at work, second century A.C.E., from a funerary relief. (Taken from L'Erma di Bretschneider, 2000.)

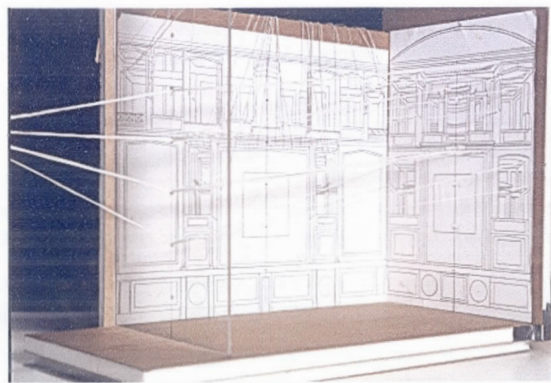


Figure 1.139 I propose the possible use of sight lines that the artists might have used to determine the construction of the architectural projective angles.

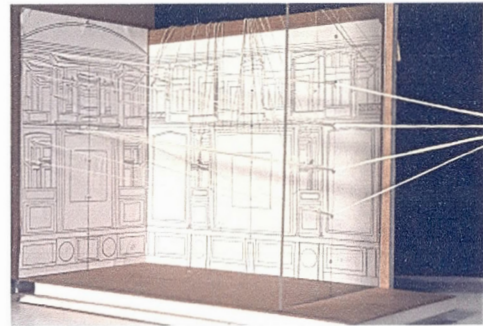
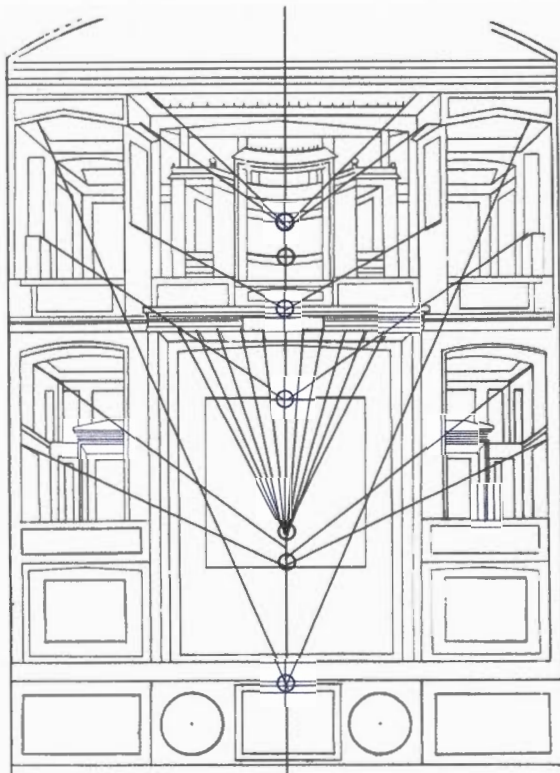


Figure 1.141 I found this method to closely simulate the projective angles of this room. This is perhaps also the reason that there are no absolute convergent angles: they did not look for them.

Figure 1.140 Strings are pulled taut to salient points on the outline of the architectural projective angles and correspond to the holes in the plexiglass wall of the model.

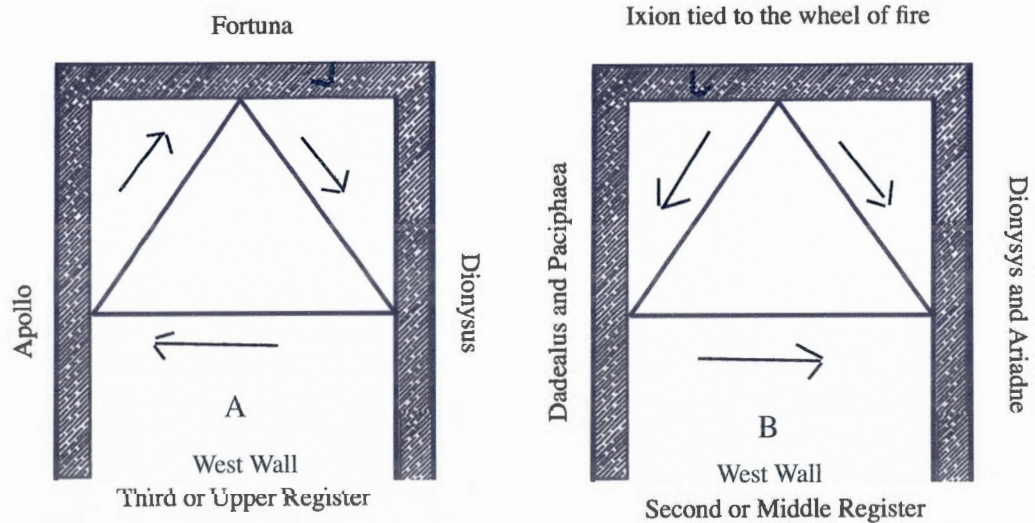


Figure 1.142 Diagram (A) demonstrates the proposition regarding the triangulation of the gaze between the gods on the Third Register. Diagram (B) demonstrates the proposition regarding the triangulation of the gaze between the mythological characters of the Second Register.

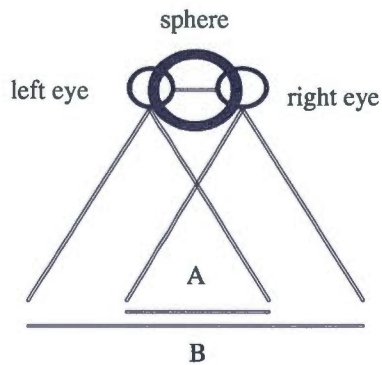


Figure 1.143 My diagrammatic representation of Euclid's proposition # 27. When the distance between the eyes is smaller than the diameter of a sphere, then that which is seen is greater than the sphere's diameter. Two divergent sets of rays from the eyes cover a larger field (A) bigger than the sphere and (B) again larger with binocular vision.

On the right: a visual cone as understood in classical optics. (Taken from Edgerton Jr., 1991.)

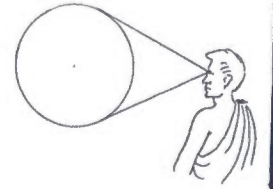


Figure 1.144 (Below). Summary of pictorial space on the First, Second and Third Register of the *Ixion* Room.

### Third Register

The entire Upper Register has **pictorial spatial continuity without oclusions** other than the architectural structures of columns, balconies, and roofs of the **open ended aedicule and at centre a collonnade or exedra**, with an impluvium at centre. This opened space is **infused with lighter, finer atoms contained by the soul and brain**. The pictorial space seems to **recede infinitely** and at the same time the balconies give the appearance of **projecting out into the actual space of the room or beyond the wall's surface. Space seems undefined and unfamiliar.**

### Second Register

Architectural representations – windows – give the appearance of **spatial continuity behind the central mythological panels**. Still lives on the east wall have a very **shallow successive pictorial space**.

The pictorial space of the mythological scene is **relatively shallow**. It appears to be staged **behind the pictorial surface of the wall it is painted on**. This is true for both the Ixion myth and Dadaelus and Pasiphea. On the other hand, the landscape setting for Dionysus discovering Ariadne in the upper edge terminates with a **view of a horizon on the ocean's infinite space**.

Architectural representations – windows – give the appearance of **spatial continuity behind the central mythological panels**.

On the south and north wall, the paintings of the naval battles have the ocean receding into **pictorial infinity**

### First Register

The First Register with its imitation marble slabs is given the appearance of being an integral and decorative feature of the wall's surface with no intention of creating any sense of spital illusion other than the thickness of the material of marble itself.

## **CHAPTER II**

### **Illustrations**



Figure 2.1 Basilica Santa Croce as seen from the side (Taken from Canali, 1954.)



Figure 2.2 Basilica Santa Croce; a contemporary view of the front facade. (Taken from Micheletti, 1998.)



Figure 2.3 A painting from 1718 shows the extensiveness of the complex of Santa Croce. (A) marks the unfinished front of the Basilica. (Taken from Canali, 1954.)



Figure 2.4 Interior view of the Basilica looking towards the Main Chapel with the smaller *Bardi* Chapel (B) adjoining it on its right. Please note that the fresco of *Saint Francis Receiving Stigmata* (B) is located directly above the entrance to the Chapel. (Taken from Micheletti, 1998.)

PLAN OF THE MONUMENTAL COMPLEX OF SANTA CROCE

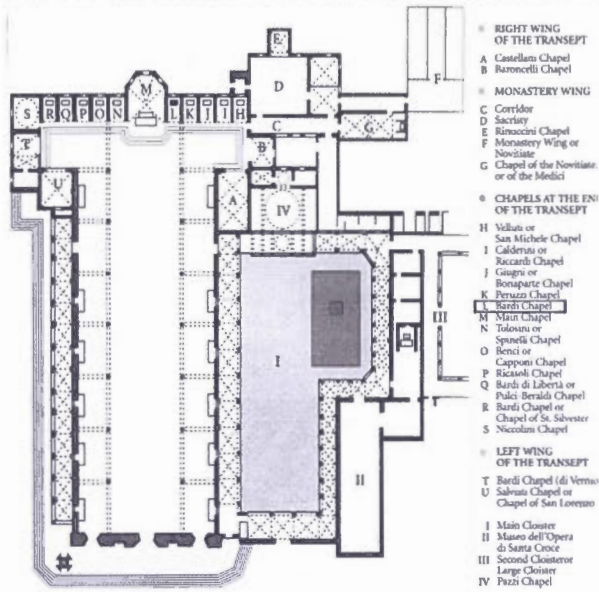


Figure 2.5 Plan of the Santa Croce Basilica Complex. (Taken from Canali, 1954.)

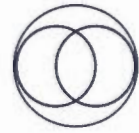


Figure 2.6 The arch that defines the *Bardi* Chapel at its apex is an example of squaring the circle and is typical of a Gothic arch.



Figure 2.7 Narrow tall stained glass windows at the rear of the *Bardi* Chapel representing the life of Christ.



Figure 2.8 Detail from the stained glass window illustrating the Annunciation by Jacopo del Casentino, 16th century.



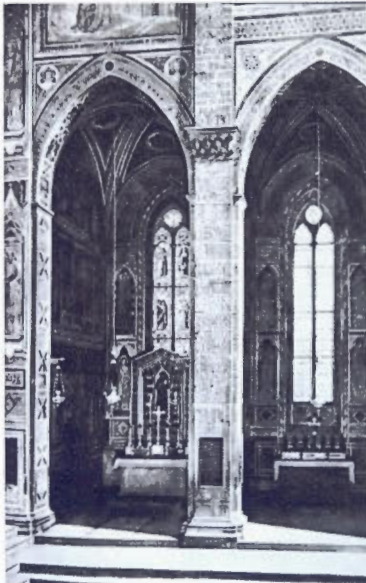


Figure 2.9 View into the *Bardi* Chapel, where the stone altar is clearly visible.



Figure 2.10 Looking up at the quadripartite vault at the ceiling of the *Bardi* Chapel—with four medallions representing the Franciscan virtues.



Figure 2.11 Detail of one of the Four Virtues, possibly poverty.



Figure 2.12 The pier butress (A) is a painted trompe l'oeil.



Figure 2.13 Giotto, 1330's. Image of Saint Clair. (Taken from Canali, 1954.)



Figure 2.14 Giotto, 1330's. Image of Saint Louis of Toulouse. (Taken from Canali, 1954.)



Figure 2.15 Giotto, 1330's. Image of Saint Elizabeth of Hungary. (Taken from Canali, 1954.)



Figure 2.16 The right hand wall of the *Bardi* Chapel with three cycles from the life of Saint Francis. Giotto 1330's. (Taken from Canali, 1954.)



Figure 2.17 Left hand wall of the *Bardi* Chapel with three cycles from the life of Saint Francis. Giotto 1330's. (Taken from Busignami, 1993.)



Images of the six frescoes inside the *Bardi Chapel* are taken from Bellosi, 1981.  
 Figure 2.18 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*.



Figure 2.19 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*. (A) Diagonal thrust of father advancing towards his son and (B) Vertical thrust of the folded hands and figure of Saint Francis.



Figure 2.20 Giotto, 1330's. *The Confirmation of the Rule*. Saint Francis presents the first rules on a scroll to the Bishop of Sabina.



Figure 2.21 Giotto, 1330's. *The Confirmation of the Rule*. (A) In the ocleui, Saint Peter looking heavenward.



Figure 2.22 Giotto, 1330's. *The Confirmation of the Rule*. The centralized roof-lines lead the viewer's eyes upwards.



Figure 2.23 Giotto, 1330's. *Trial by Fire*. Saint Francis (A) challenges the priests (B) to walk through the fire with him.

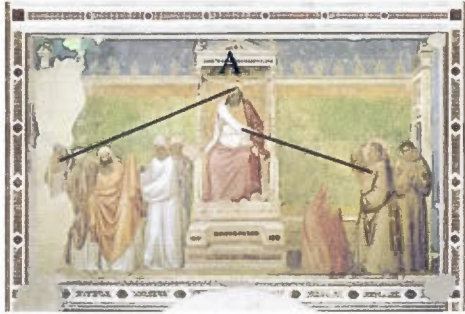


Figure 2.24 Giotto, 1330's. *Trial by Fire*. The Sultan (A) looks at the priests fleeing on the left while pointing to Saint Francis on the right side of the fresco.

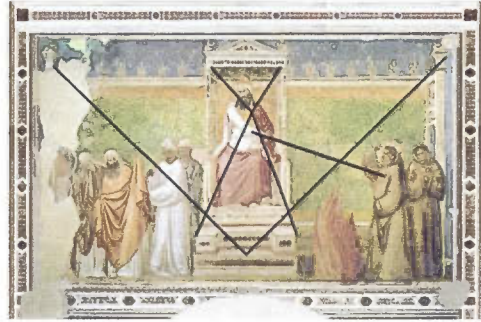


Figure 2.25 Giotto, 1330's. *Trial by Fire*. The Sultan becomes the focus of converging perspective.



Figure 2.26 Giotto, 1330's. *The Apparition of Saint Francis at Arles*.

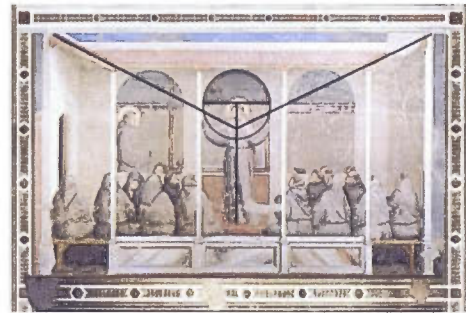


Figure 2.27 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The central arch and the figure of the Saint with uplifted arms, forms a cross.



Figure 2.28 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. Saint Francis laid in state in his monk's habit while (possibly) Lord Pontiff Alexander affirms the sacred Stigmata.

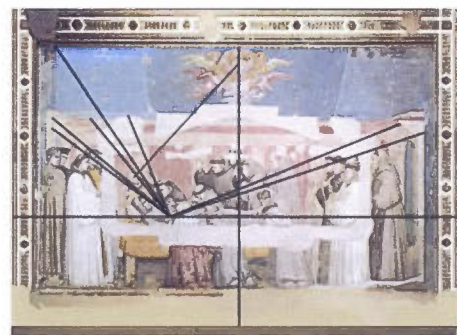


Figure 2.29 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. The imploding or divergent architectural extended perspective lines emanate out from the body of Saint Francis.



Figure 2.30 Giotto, 1330's. *Visions of Brother Agostino and Bishop Guido of Assisi*. Two events are portrayed here. Brother Augustine on the left and the Bishop of Assisi on the right.

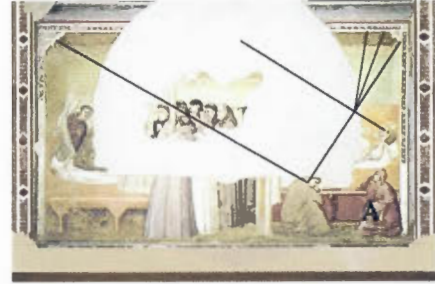


Figure 2.31 Giotto, 1330's. *Visions of Brother Agostino and Bishop Guido of Assisi*. The figure at A forces the viewer to look upwards.



Figure 2.32 Giotto, 1330's. *Saint Francis Receiving Stigmata*. The circular marks that are painted on relief, I propose, represent nail-heads. (Taken from Peruzzo, 1986.)



Figure 2.33 Giotto, 1330's. *Saint Francis Receiving Stigmata*. Lines mark the connection between the wounds of Christ and the stigmata received by Saint Francis.



Figure 2.34 Giotto, 1297-1299. Border from *The Apparition of Saint Francis at Arles* from the Upper Basilica of St. Francis in Assisi. (Taken from Casa Editrice Francescana, 1987.)



Figure 2.35 *Saint Francis Receiving Stigmata*: detail of border. (Taken from a postcard I bought in Santa Croce bookshop; photo by Becocci, Fierenze: no date.)



Figure 2.36 Giotto, 1330's *Saint Francis Receiving Stigmata*: an enlargement of a detail of the border to show the three dimensional relief-like rendering of the nail-head.



Figure 2.37 Giotto, 1330's. The painting of the three saints is given the appearance of sculpted figures standing on a base in a niche integrated into the architecture.

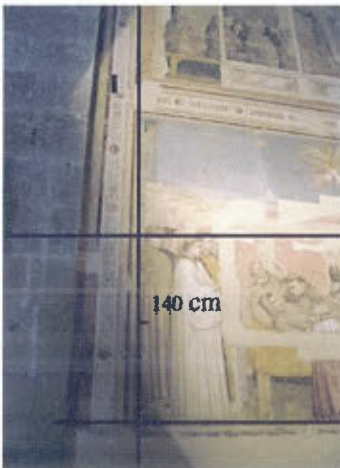


Figure 2.38 Giotto, 1330's. The size of Giotto's figures is 140 cm, close to the actual size of an average person at the time.



Figure 2.39 The neutral base underneath the frescoes measures 160 cm in height. The frescoes begin just above the eyelevel of the standing viewer, so that the viewer is compelled to look up while at the same time having the feeling of being able to participate in the activity of the scene.

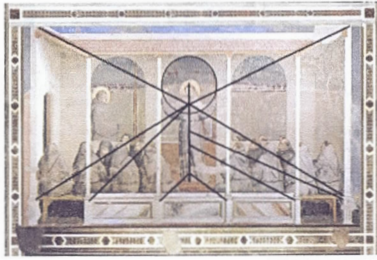


Figure 2.40 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The lines that project towards Saint Francis also can act as his field of vision.



Figure 2.41 Giotto, 1330's. *The Confirmation of the Rule*. The projective lines of the coffered ceiling project towards the disciples behind Saint Francis.



Figure 2.42 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*. In the painting, light is represented as projected from the right side (A), simulating the light from the actual window on the right of the fresco.



Figure 2.43 Giotto, 1330's. *The Confirmation of the Rule*. Both the perspectival confluence and the composition of the figures in this fresco perpetuate a sense of pictorial convexity.

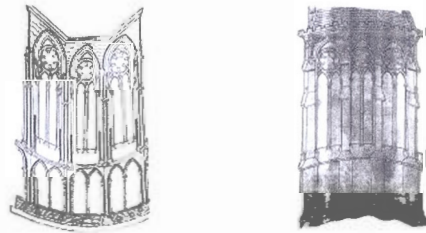


Figure 2.44 Convex and concave pictorial representations of gothic architectural details from the sketchbook of Villard de Honnecourt, 1225-1250. (Taken from Bowie, 1959.)



Figure 2.45 Giotto, 1330's. *The Confirmation of the Rule*. Planes diminish in size with distance and give through variable scaling a sense of depth.



Figure 2.46 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*. The plane of the wall around the palace increases as the frontal leading edge while diminishing into the distance.



Figure 2.47 Giotto 1330's *Trial by Fire*. Planes diminish in size as they recede into the distance.



Figure 2.48 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. (A) Light bathes the scene, nothing is hidden, all is visible. (B) The eyes are large with love, but the expression is reserved, filled with deep sorrow.



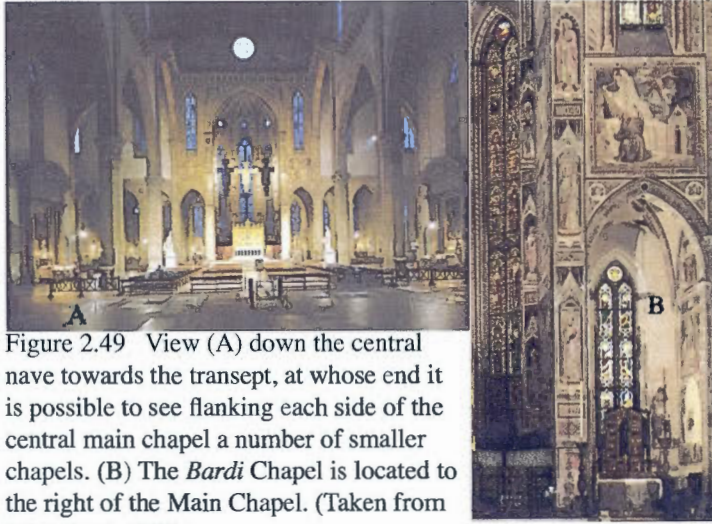


Figure 2.49 View (A) down the central nave towards the transept, at whose end it is possible to see flanking each side of the central main chapel a number of smaller chapels. (B) The *Bardi Chapel* is located to the right of the Main Chapel. (Taken from Micheletti, 1998.)



Figure 2.50 Giotto, 1330's. Reconstruction of left wall. (A) *Saint Francis Renouncing his Worldly Goods*. (B) *The Apparition of Saint Francis at Arles*. (C) *The Death of Saint Francis and the Verification of the Stigmata*.

Figure 2.51 Giotto, 1330's. Reconstruction of right wall. (A) *The Confirmation of the Rule*. (B) *Trial by Fire*. (C) *Visions of Brother Agostino and Bishop Guido of Assisi*.



Figure 2.52 Giotto, 1330's. *Saint Francis Receiving Stigmata*.



Figure 2.53 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*. For the Franciscan Order the rejection of worldly goods, and of worldly emotive connection completely transferred to God, is the greatest sign of integrity.

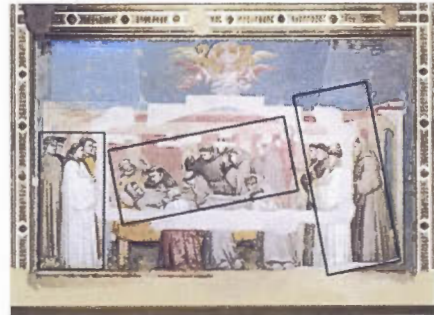


Figure 2.54 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. Compositionally, the emotional experience is centralized, and the downward slope gives it its sorrow.



Figure 2.55 Giotto 1330's *Trial by Fire*. The Sultan abandoned in the middle also speaks of integrity in the face of abandonment.



Figure 2.56 Giotto, 1330's. *The Confirmation of the Rule*. The central group is charged with expectations and ambition, in contrast to the figures on either side that are silently witnessing the event.



Figure 2.57 Giotto, 1330's. *Saint Francis Receiving Stigmata*. The direct transmission of right hand to right hand, right foot to right foot.

Figure 2.58 Giotto, circa 1312, hanging in the Louvre. The transmission here is mirror-like. Right hand to left hand, right foot to left foot. (Taken from Cavazzini, 1998.)



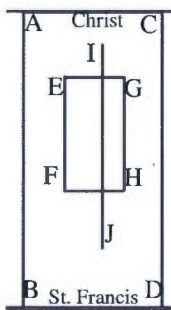


Figure 2.59 This schematic model demonstrates the mirror-like relationship as represented in the Giotto's panel of *Saint Francis Receiving Stigmata*, c. 1300, hanging in the Louvre. A - B right hand to left hand; C - D left hand to right hand; E - F right foot to left foot; G - H left foot to right foot; I - J stigmata wound on the right side of Christ to the left side of Saint Francis. This mirror transference constructs parallel but not equivalent relationships.

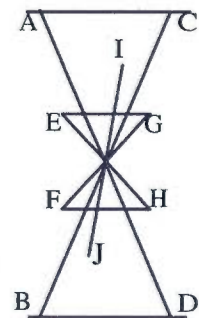


Figure 2.60 This is a schematic of *Saint Francis Receiving Stigmata*, painted above the *Bardi Chapel*. A - B represents right hand to right hand; C - D left hand to left hand; E - F right foot to right foot; G - H left foot to left foot; I - J right side of Christ to right side of Saint Francis. The relationship between Christ and Saint Francis is duplicated through the dynamics of the intersecting diagonal lines that at the point of exchange vanish into the infinite (the yet unspoken of vanishing point).



Figure 2.61 Map (A), the extent of the Umayyad Caliphate Empire, A.C.E. 737. (B) Giotto, 1330's. The Christian conversion of the Arab invaders: the converted Sultan represented by Giotto in the *Trial by Fire*. (C) The receding Arab invasion by 1130 A.C.E., closer to the time of the life of Saint Francis. (The maps are taken from McEvedy, 1978.)



Figure 2.62 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*, upper panel. *The Apparition of Saint Francis at Arles*, lower panel. There is evidence of Giotto valuing the idea of perfection in completing the circle through the composition in the second panel.



Figure 2.63 Giotto, 1330's. *The Confirmation of the Rule*, upper panel. *Trial by Fire*, lower panel. Evidence of the value of the idea of perfection can be seen as Giotto, through the composition in the lower panel, completes the circle.



Figure 2.64 Giotto, 1330's. The scene of the *The Apparition of Saint Francis at Arles* is framed very close to the limits of the edges of the fresco, giving the appearance of being part of the real space of the chapel.

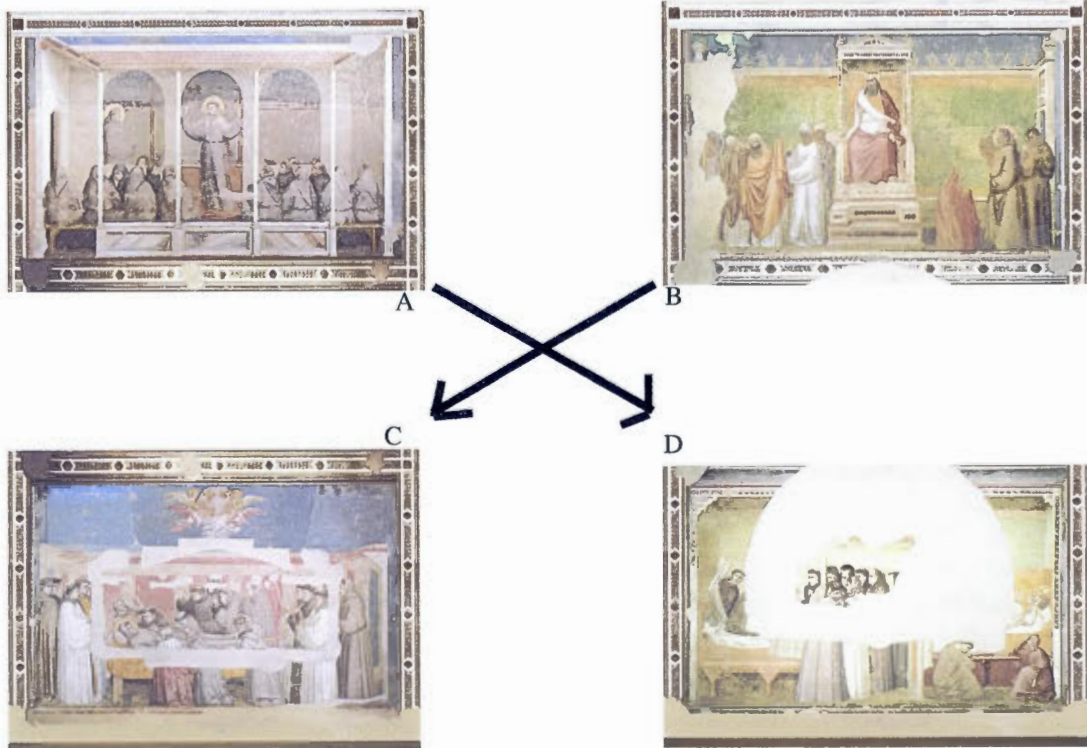


Figure 2.65 Giotto, 1330's. *The Apparition of Saint Francis at Arles* (A); *Visions of Brother Agostino and Bishop Guido of Assisi* (D); *Trial by Fire* (B); *The Death of Saint Francis and the Verification of the Stigmata* (C). The scenes of A and D take place inside, while the scenes of B and C are given outdoor settings.

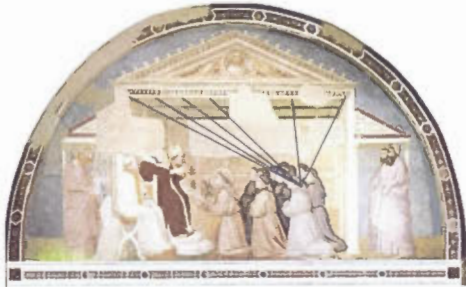


Figure 2.66 Giotto, 1330's. *The Confirmation of the Rule*. The convergence points to receding planes in the architectural structure.



Figure 2.67 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. The convergence points to receding planes in the architectural structure.

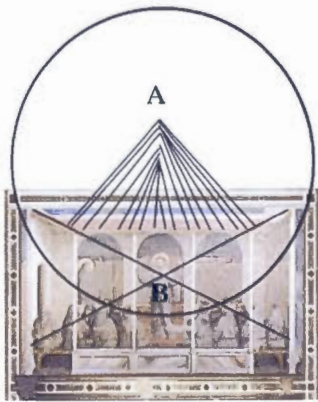


Figure 2.68 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The convergence points to receding planes in the architectural structure. In this panel there is a presence of the double infinity (A and B on the illustration.)



Figure 2.69 The *Crucifix* of 1280 painted by Cimabue. (Taken from Micheletti, 1998.)



Figure 2.70 The Giotto *Crucifix* painted in 1300. (Taken from Cavazzini, 1998.)



Figure 2.71 Giotto, 1312. *Saint Francis Receiving Stigmata*.



Figure 2.72 Illustration from a Latin manuscript of the 12th to 13th century showing the eyes (A and B) with their converging nerves (C) and attached cells (E, F, G, and H). The dwelling place of the brain, or reason, is D and E. (Taken from Marshall and Magoun, 1998.)

Figure 2.73 (A) Roger Bacon's two models of vision. A rays fall from a visible object *MP* perpendicular on the anterior surface of the glacial humor *GF* and pass through the centre of the eye. The rays before they reach the apex are refracted at *Q* and *V* descending through the vitrous humor and optic nerve. (B) Rays from visible object *AL* pass into the glacial humour and are diverted by refraction at its posteriorv surface to an apex behind. in the eye, in the common nerve. (Taken from D.C. Lindberg 1996)

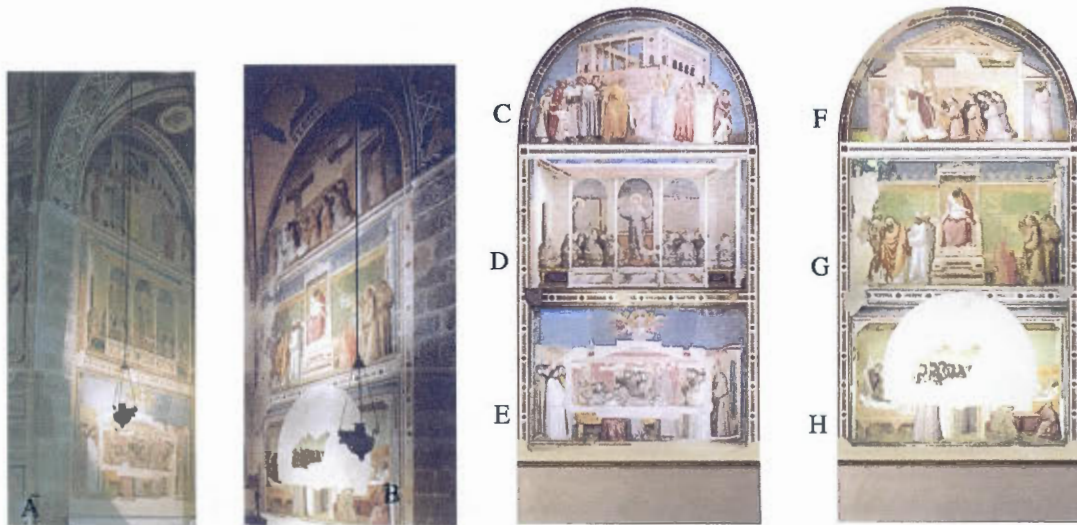


Figure 2.74 Giotto 1330's. A, B: View of left wall in the *Bardi Chapel* (Taken from Canali, 1954.) View of right hand wall of the *Bardi Chapel*. C through H: Schematic reconstructed frontal view of both walls: *Saint Francis Renouncing his Worldly Goods*, C; *The Apparition of Saint Francis at Arles*, D; *The Death of Saint Francis and the Verification of the Stigmata*, E; *The Confirmation of the Rule*, F; *Trial by Fire*, G; *Visions of Brother Agostino and Bishop Guido of Assissi*, H.

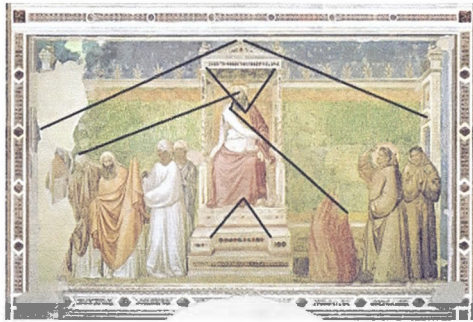


Figure 2.75 Giotto, 1330's. *Trial by Fire*.

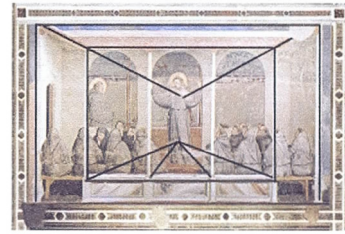


Figure 2.76 Giotto, 1330's. *The Apparition of Saint Francis at Arles*.

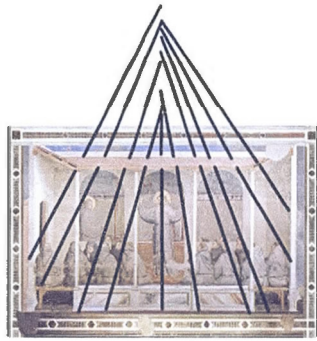


Figure 2.77 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. Perspective lines of the roof converge at an apex but also emanate over the whole scene.

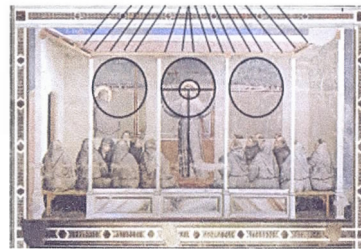


Figure 2.78 Giotto, 1330's. The circle at the centre follows the arch at the top, while also following his raised arms that encompass the sign of the Crucifixion. The halo around his head recalls the iris at the centre of an eye.



Figure 2.79 Giotto, 1330's. *Trial by Fire*. While in the original version there are clearly two doorways, only one is now visible – on the side of the viewer entering the chapel.

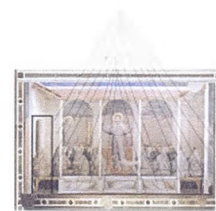


Figure 2.80 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. Divine emanation falls over the whole scene.

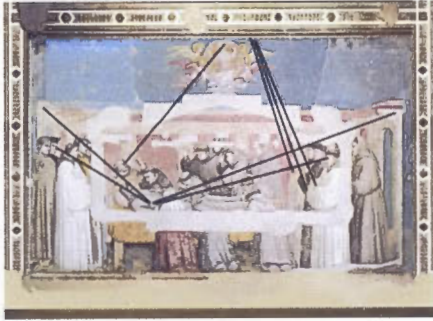


Figure 2.81 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata*. Converging perspective and linear elements simultaneously point to the stigmata wound on Saint Francis' side and Saint Francis rising up to heaven.

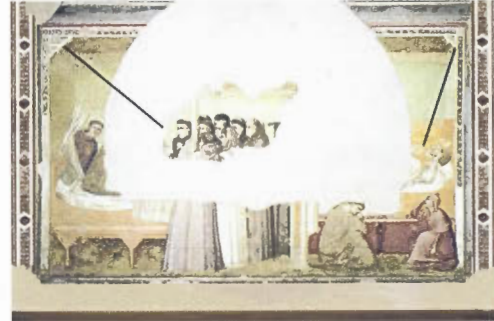


Figure 2.82 Giotto, 1330's. *Visions of Brother Agostino and Bishop Guido of Assisi*. This scene shows both refracted and reflected light.



Figure 2.83 Giotto, 1330's. *Saint Francis Renouncing his Worldly Goods*. The scene is illuminated from the right, or window side, making the left side of the wall progressively darker.



Figure 2.84 Giotto, 1330's. *Saint Francis Receiving Stigmata*. The mountain becomes a stable background against which the exchange-change is taking place.



Figure 2.85 Giotto, 1312. *Saint Francis Receiving Stigmata*. The Christ figure appears to be supported and enfolded on wings.

Figure 2.86 Giotto, Legend of Saint Francis, Assisi Cycle, 1304. *Saint Francis Receiving Stigmata* (Taken from Casa Franciscana ed., 1987.) The Christ figure appears to be supported and enfolded on wings, which give the figure a strong sense of verticality.





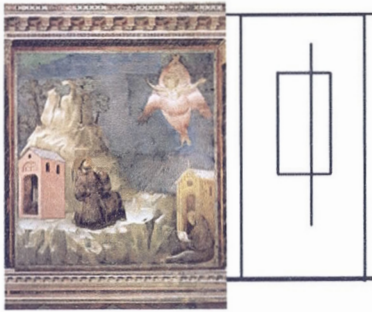


Figure 2.87 Giotto, 1304. *Saint Francis Receiving Stigmata*. The mirroring of the reception of stigmata is the same as in the Louvre panel.



Figure 2.87 Giotto, 1304. *Saint Francis Receiving Stigmata*. The mirroring of the reception of stigmata is the same as in the Louvre panel.



Figure 2.89 Masaccio, *Trinity*, 1427-1428. (Taken from Borsi, 1998.) Giotto and Masaccio share the assumption that physical truth is a precondition of their art. Measures that were implied before, now become systematic.

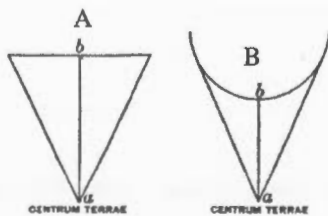


Figure 2.90 (Taken from Burke (trans.), Bacon's *Majus Opus*, 1962.) The Heavens are concave (B) and must be equally distant from the earth (A) on account of the equality of nature. Therefore, the heavens and earth must by necessity be a spherical form.

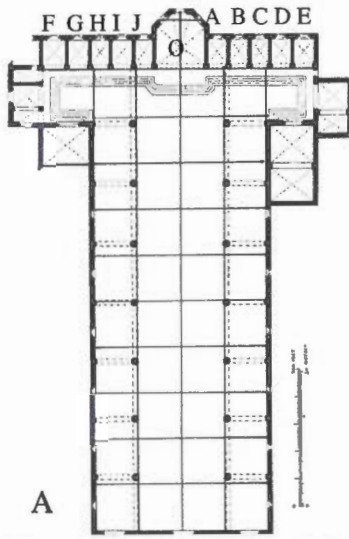


Figure 2.91 (A) The plan of the church is divided into 10 sq meter units. The transept is 11 units deep. Each chapel at the end of the transept is 4 m wide with a 1 m thick wall between them. F, G, H, I, J equal 20 meters. A, B, C, D, E also equals 20 meters. The central chapel is 10 x 10 m. wide and 10 m deep.

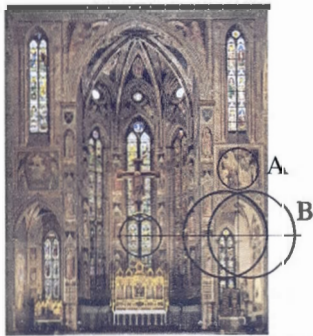


Figure 2.94 The diameter of the circle that constructs the Stigmata fresco (A) is the radius of the circles that are squared to construct the gothic arch of the chapel (B).



Figure 2.95. The intradoes of the saints is one sixth's the diameter of the Stigmata fresco.

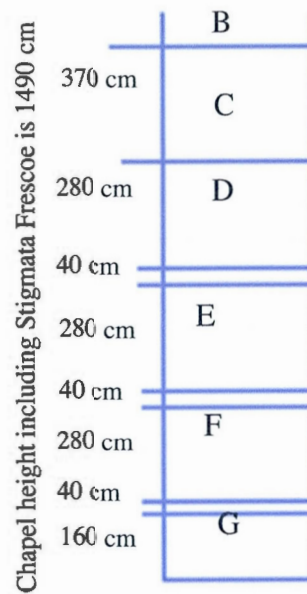


Figure 2.92 Elevation of the Bardi Chapel. Starting at the top: the fresco of *Saint Francis Receiving Stigmata* is (B), 3.90 m wide with a height (C) of 370 cm., border not included. (D, E, F) are the heights of the three frescoes on each side inside the chapel at 280 cm. The borders that surround them are 40cm wide. The 160 cm of un-painted wall at the bottom of the frescoes (G) represents approx. the height of a man.

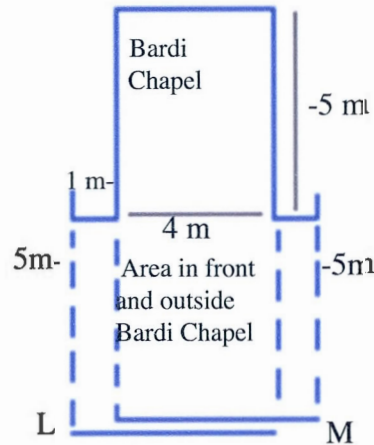


Figure 2.93 The plan of the Bardi Chapel can be rounded off to 5 meters deep, four meters wide inside, with 1 m for the width of the stone wall separating each of the adjoining five chapels. From my experience, the best viewing position to take all three frescoes on each side in at once is approximately 5 meters outside the chapel and one meter to the right or left of the entrance to the chapel: (L) on the left, (M) on the right, which creates a 5 meter square outside the chapel.



Figure 2.96 Giotto, 1330's.  
*The Apparition of Saint Francis at Arles.*

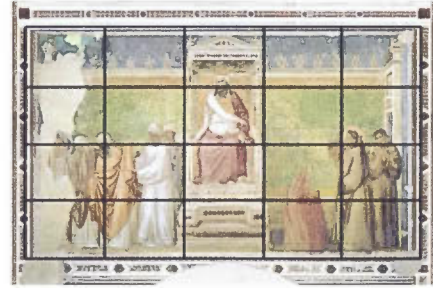


Figure 2.97 Giotto, 1330's. *Trial by Fire.*

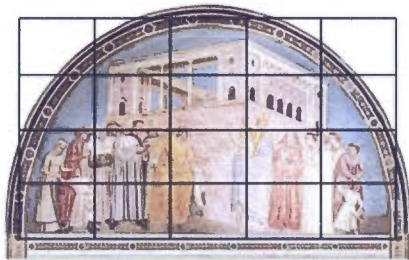


Figure 2.98 Giotto, 1330's.  
*Saint Francis Renouncing his Worldly Goods.*

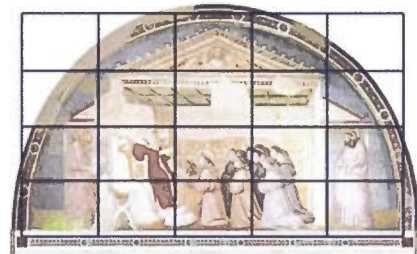


Figure 2.99 Giotto, 1330's.  
*The Confirmation of the Rule.*



Figure 2.100 Giotto, 1330's. *The Death of Saint Francis and the Verification of the Stigmata.*



Figure 2.101 Giotto, 1330's. *Visions of Brother Agostino and Bishop Guido of Assisi.*



Figure 2.102 Giotto, 1330's.  
*The Apparition of Saint Francis at Arles.*

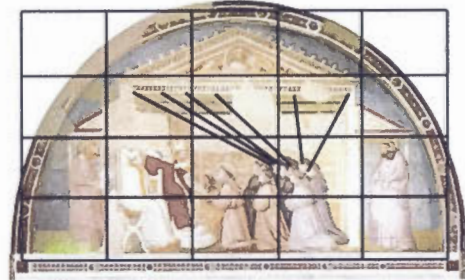


Figure 2.103 Giotto, 1330's.  
*The Confirmation of the Rule.*



Figure 2.104 Giotto, 1330's.  
*Trial by Fire.*

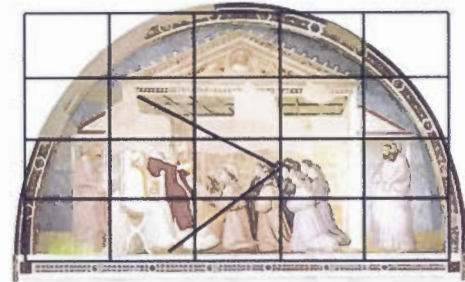


Figure 2.105 Giotto, 1330's.  
*The Confirmation of the Rule.*

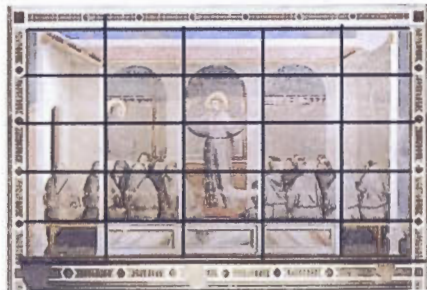


Figure 2.106 Giotto, 1330's.  
*The Apparition of Saint Francis at Arles.*

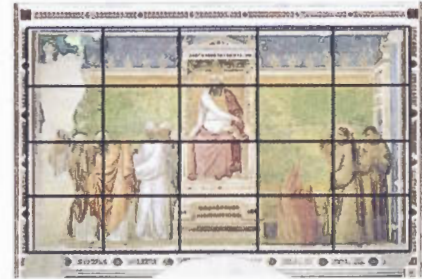


Figure 2.107 Giotto, 1330's. *Trial by Fire.*

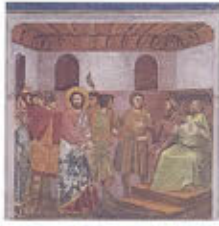


Figure 2.108 Scenes from the life of Christ. Padua, Arena Chapel. (Taken from Bellosi, 1981.)



Figure 2.109 Giotto, 1330's. *Saint Francis Receiving Stigmata*.



Figure 2.110 Giotto, 1312. *Saint Francis Receiving Stigmata* does imply a diagonally receding plane, but in comparison with the *Bardi* version (Figure 2.111: Giotto, 1330's, *Saint Francis Receiving Stigmata*) it is not as fully articulated.



Figure 2.111 Giotto, 1330's. *Saint Francis Receiving Stigmata*. The diagonal plane is clearly and fully articulated and cuts into space diagonally.



Figure 2.112 Giotto, 1330's. *Saint Francis Receiving Stigmata*  
It is curious how the force-field set up by the lines between Saint Francis and the feet of Christ (A) reappears again in the construction of the cave (B) and the construction of the mountain-side. The relationship of the red line (D) in its relationship to the red lines forming angle (B) is identical to the relationship of green line (C) to the green lines forming angle (A).

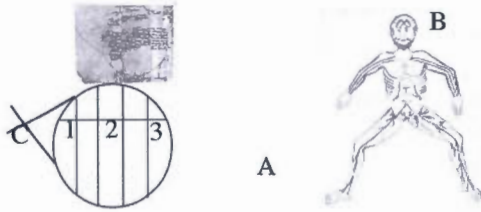


Figure 2.113 Diagram A: First cell receives sensations from the body, the second cell is the site of judgment and reason, and the third cell takes care of memory. C is the location of the optic chiasma. (Taken from Clark and Dewhurst, 1972.) Drawing B is a thirteenth century drawing that seems to make a diagrammatic representation of vision, describing the optic nerve and the optic chiasma. (Taken from Sudhoff, 1908.)



Figure 2.114 Giotto, 1330's. *Saint Francis Receiving Stigmata* located on the right hand over the *Bardi Chapel*.



Figure 2.115 Gasparo Martinelli, 1837. *Dogma of the Immaculate Conception* (Taken from Canali, 1954.)



Figure 2.116 Giotto, 1330's. *Saint Francis Receiving Stigmata*. The construction between Saint Francis and Christ (in red) and the representation of both the figure of Christ and that of Saint Francis – as well as the architectural representations – are fully dynamically integrated.



Figure 2.117 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The presence of Saint Francis is rendered with the same sense of solidity as the group of friars experiencing their collective vision.



Figure 2.118 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The same gesture of open arms as in the apparition below (see Figure 2.117) is only slightly modified by the Saint, now looking heavenward..

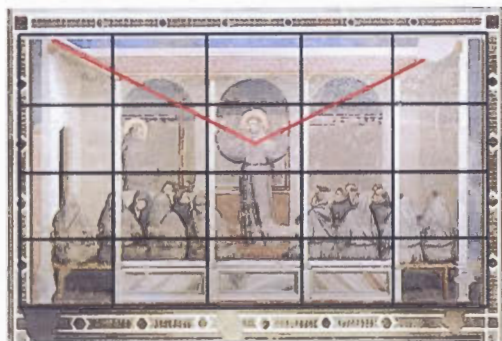


Figure 2.19 Giotto, 1330's. *The Apparition of Saint Francis at Arles*. The lines of the roof converge strategically at the location of Saint Francis's heart.



Figure 2.120 *Saint Francis Receiving Stigmata*. The line that passes from the stigmatic wound on the side of Christ's body passes invisibly (drawn here in red for emphasis) through the hands and eyes of Saint Francis.



## **CHAPTER III**

### **Illustrations**



Figure 3.1 Exterior views of the Orangerie situated in the gardens of the Tuileries in Paris.



Figure 3.2 The Orangerie in the gardens of the Tuileries was located on the principle east-west axis of Paris that was centred on the Louvre – located at the east end – and the Arc de Triomphe at the west end. It is interesting to note that the layout of the *Nymphéas* decoration integrated this east-west axis into the actual disposition of its subject matter. The Orangerie is located on the south-west corner near the Place de la Concorde. (Taken from the Michelin Guide, 1981.)



Figure 3.3 Views of Monet's third studio at Giverny, 1917, where the *Nymphéas* installation can be seen in progress. (Taken from Wildenstein, 2003.)



Figure 3.4 Eugene Boudin, *The Beach at Trouville* 1864. (Taken From Sagner-Duechtig, 2004.)



Figure 3.5 Monet standing in the garden in front of his house in Giverny. (Taken from Rachman, 1997.)

Figure 3.6 The Fresco depiction of *The Garden of Livia* from Prima Porta near Rome. Late first century B.C.E. (Taken from Wheeler, 1996.)



Figure 3.7 This is a view from Monet's second studio overlooking the garden and greenhouse, 1924. (Taken from Widenstein, 1978.)

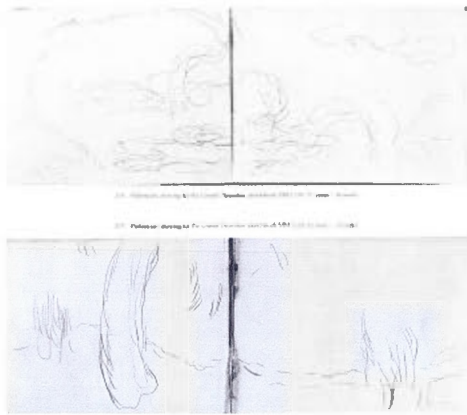


Figure 3.8 Preliminary drawings made by Monet for the *Nymphéas* Decorations (sketchbook MM..5129,17 verso recto. and below MM. 5129,12 verso recto). Possibly drawn over other images sometime between 1887-1890. (Taken from Spate, 1992.)

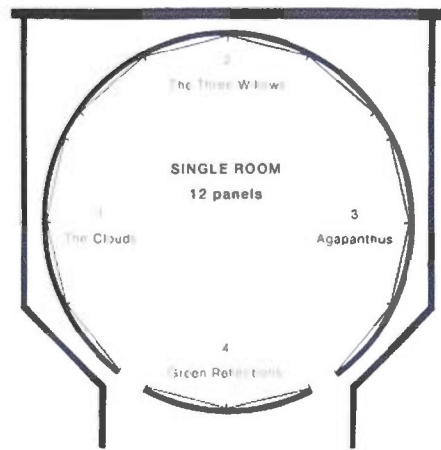


Figure 3.9 This circular single room 18.5 meters in diameter designed by Louis Bonnier for the Rodin Museum was the first configuration for the water lily installation.

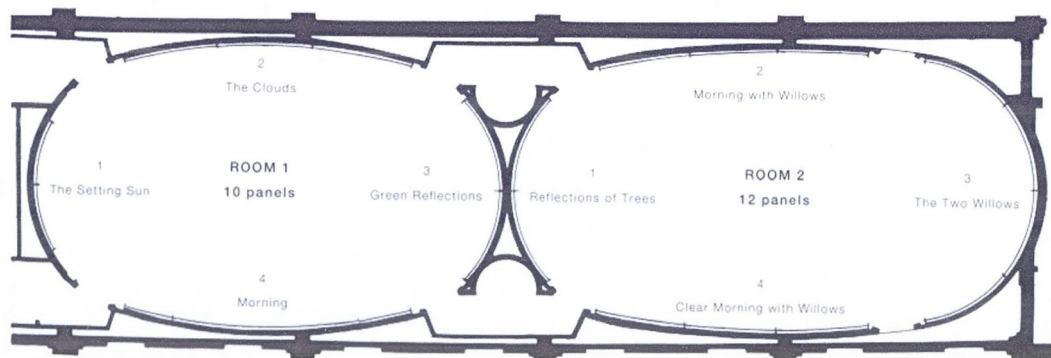


Figure 3.10 This design was the final configuration for two separate rooms to house Monet's *Nymphéas* project. Camille Lefevre, appointed by the Ministry, redesigned the long rectangular space of the Orangerie into two separate but interconnected oval spaces. The titles that are given in English on this plan are the titles by which I acknowledge the works. ( Taken from Spate, 1992.)

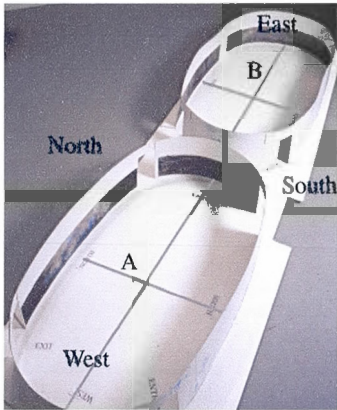


Figure 3.11 A, Room One, is the smaller of the two rooms (here seemingly larger due to perspectival and photographic distortion). The length of this room is 20.3 meters and 12.30 meters width. B, Room Two, is 23.30 meters long and also 12.30 meters wide.

Figure 3.12 The full height of the rooms that house the *Nymphéas* installation is 4 m, the paintings are half that or 2 m in height and are hung 33 cm above the floor.

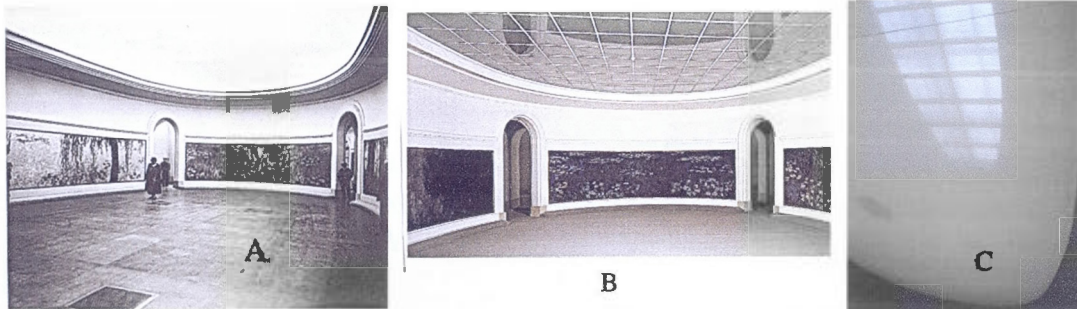
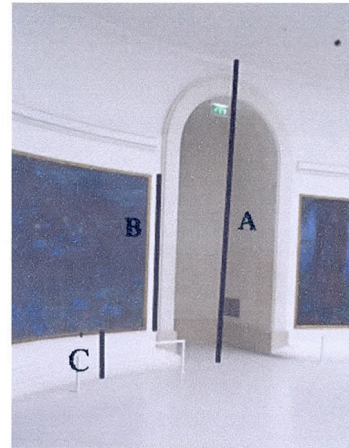


Figure 3.13 The ceiling of the original installation (A) was a false skylight following the natural curve of the rooms. This picture was taken in 1930. (B) is a view of the 1984 renovation with artificial illumination. (Both views taken from Rachman, 1997.) (C) is the most recent ceiling (Taken by myself in 2007.) It is a return to soft filtered daylight, which Monet would have liked, since it simulates the daylight conditions in his studio, with its cloth-covered or filtered skylights.

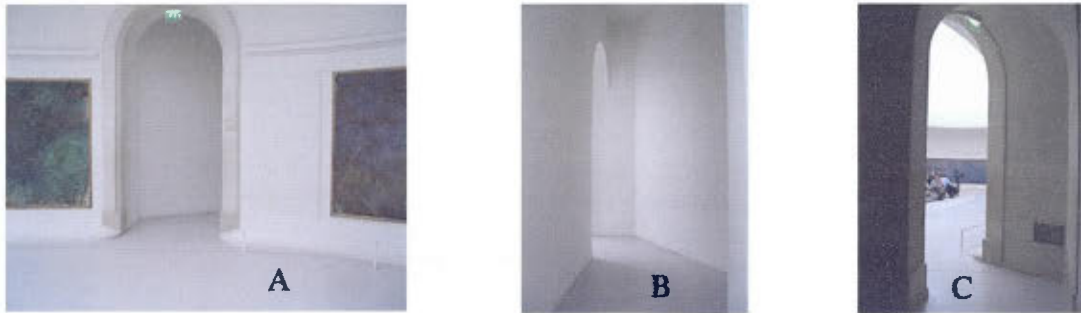


Figure 3.14 The left hand entrance into Room One from the main entrance hall (A). The small space in between Room One and entering Room Two (B). This space in between Room One and Two is neutral and makes seeing Room Two the more impressive as an experience. (C) is the right hand entrance into Room Two.

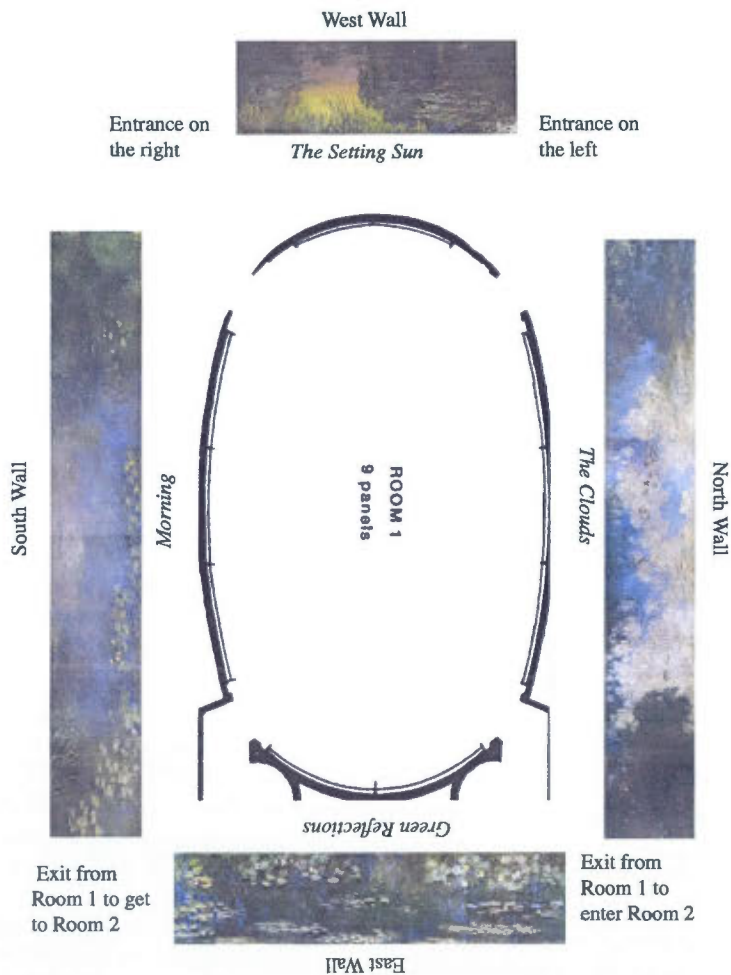


Figure 3.15 The relationship of the works in Room Two is laid out as in the plan of figure 3.10. *The Setting Sun* hangs on the west wall, *Clouds* on the north wall, *Morning* on the south wall and *Green Reflections* on the east wall.

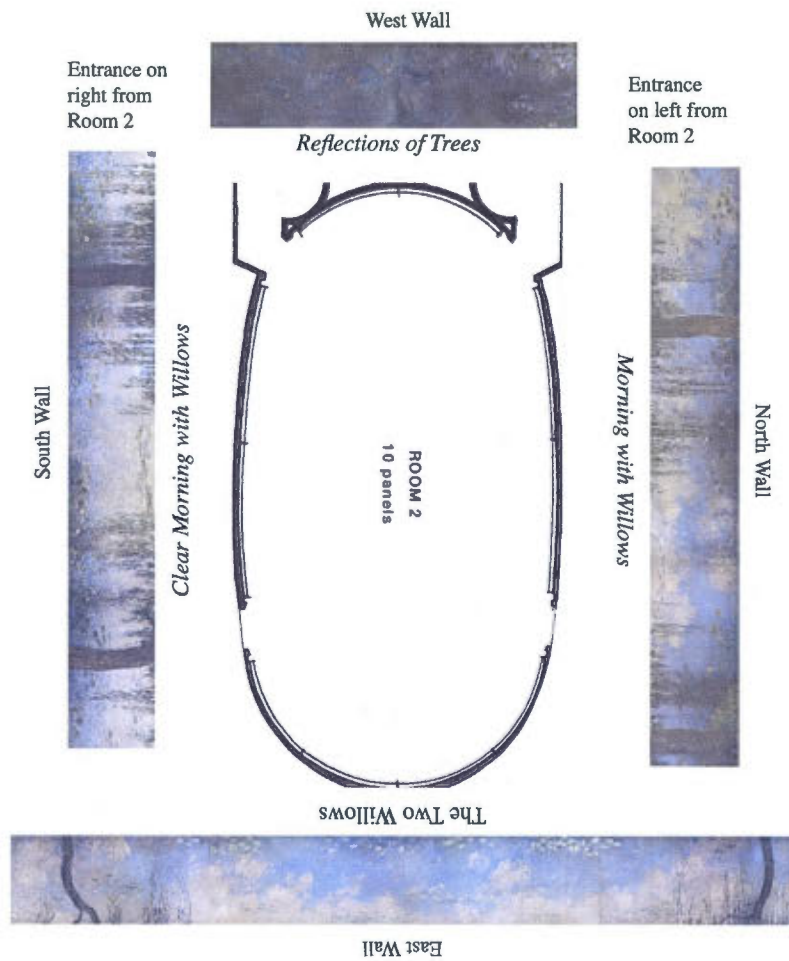


Figure 3.16 The relationship of the works in Room Two is laid out as in the plan of figure 3.10. Also it is possible to see, looking at figure 3.15 and 3.16, the back-to-back relationship of the west wall in Room Two and the east wall of Room One. *Reflections of Trees* of Room Two hangs on the west wall, *Clear Morning with Willows* on the south wall, *Morning with Willows* on the north wall and *The Two Willows* on the east wall.



Figure 3.17 Claude Monet, *The Setting Sun*, 200 cm x 600 cm, completed around 1921, Room One, west wall, *The Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.18 Claude Monet, *Green Reflections*, 200 cm x 850 cm, completed between 1917-1921, Room One, east wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.19 Claude Monet, *The Clouds*, 200cm x 1,275 cm, completed between 1923-1924, Room One, north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.20 Claude Monet, *Morning*, 200 cm x 1,275 cm, completed between 1921-1926, Room One, south wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.21 Claude Monet, *Reflections of Trees*, 197 cm x 850 cm, completed between 1922-1924, Room Two, west wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.22 Claude Monet, *The Two Willows*, 197 cm x 1,690 cm, completed between 1924-1926, Room Two east wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)





Figure 3.23 Claude Monet, *Morning with Willows*, 197 cm x 1,277 cm, completed between 1916-1926, Room Two north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.24 Claude Monet, *Clear Morning with Willows*, 197 cm x 1,277 cm, completed between 1916-1926, Room Two, South Wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.25 Claude Monet, *The Clouds*, 200cm x 1,275 cm, completed between 1923-1924, Room One, north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) The Line drawn across this painting indicates approximately Monet's own eye level.



Figure 3.26 A photograph of Monet standing in front of the uncompleted painting for the *Nymphéas* Installation, *Morning*. From this photograph, taking into account his distance from the work, and the fact that the work is positioned on supports – scaffolding – I conclude that the horizon line in the painting is approximately Monet's own horizon line as drawn in figure 3.25 above.



Figure 3.27 Claude Monet, *Morning*, 200 cm x 1,275 cm, completed between 1921-1926, Room One, south wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) The lines indicate the apparently converging grasses that simulate a sense of perspective.



Figure 3.28 Claude Monet, *The Two Willows*, 197 cm x 1,690 cm, completed between 1924-1926, Room Two, east wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) In this work, the converging formation of reflected clouds helps to create a sense of depth to the field.



Figure 3.29 Claude Monet, *Clear Morning with Willows*, 197 cm x 1,277 cm, completed between 1916-1926, Room Two, south wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) In this work, it is the foliage from the trees that creates a sense of convergence.

Figure 3.30 take picture of Monet's north and south wall on my studio wall



Figure 3.31 Details of *Morning with Willows* showing the tree on the left of the painting (A) and (B) on the right of the painting. These trees and their branches have a real sense of volume and between them they set up a kind of stereoscopic field when looking at the whole painting from a distance. Please refer to figure 3.23. (Taken from Stuckey, 1988.) The installation view (C) was taken by myself and shows even more clearly the presence of the tree on the left.



Figure 3.32 Detail of *Clear Morning with Willows* has the same effect of volumetric presence of the trees and the mesmerizing stereoscopic focus of the field between the trees. Please refer to figure 3.24 for the full panoramic view of this painting. (Taken from Stuckey, 1988.)



Figure 3.33. This is a photograph of Monet taken in 1926 by Nicholas Murray. Monet appears to be wearing a pair of glasses whose right side is clear while the left side is dark and opaque glass. (Taken from Wildenstein, 1987.)

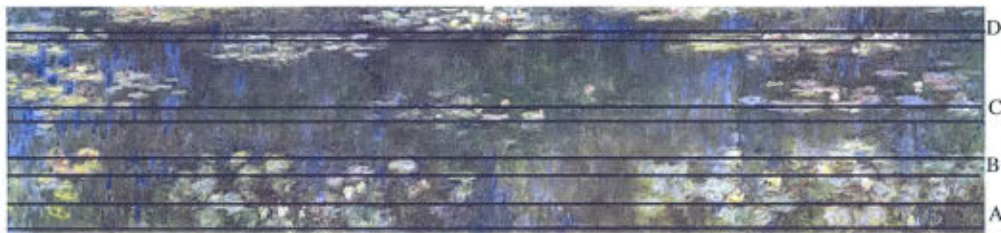


Figure 3.34 Claude Monet, *Green Reflections*, 200 cm x 850 cm, completed between 1917-1921, Room One, east wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) The gradual diminishing (A), (B), (C) of the water lilies gives the appearance of a relatively short distance away from the viewer over the distance of the height of the painting, compared to *Morning*.



Figure 3.35 Claude Monet, *Morning*, 200 cm x 1,275 cm, completed between 1921-1926, Room One, south wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) In *Morning* there is a dramatic diminishing of the size of the lily pads, (A), (B), (C).



Figure 3.36 The tall grass on the left hand side in this detail of *Morning* appears very large compared to the receding small water lily pads on the top edge of the painting, exaggerating the sense of scale and distance.

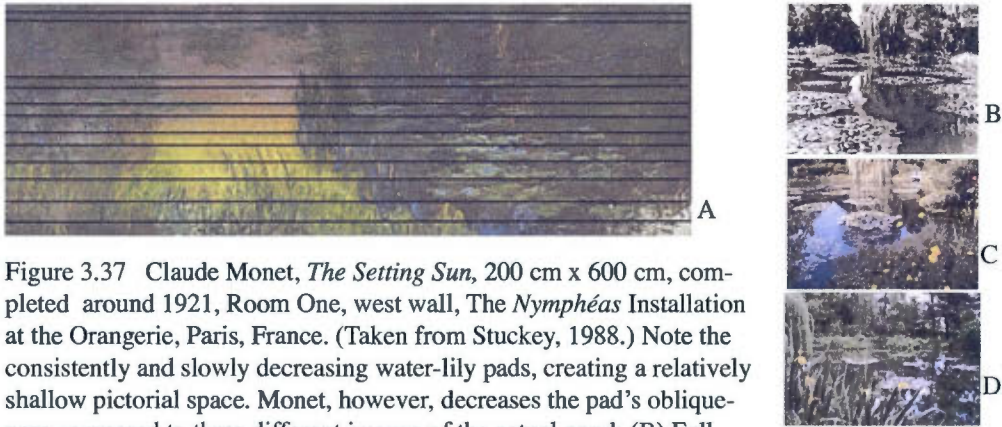


Figure 3.37 Claude Monet, *The Setting Sun*, 200 cm x 600 cm, completed around 1921, Room One, west wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) Note the consistently and slowly decreasing water-lily pads, creating a relatively shallow pictorial space. Monet, however, decreases the pad's obliqueness compared to three different images of the actual pond: (B) Full length of water-lily pond taken 1933; (Taken from Orr and Tucker, 1995.); (C) Actual state of pond in 1990. ( Taken from Hoog, 1990.); (D) Actual state of pond in 1995. (Taken from Orr and Tucker, 1995.)



Figure 3.38 Claude Monet, *The Clouds*, 200cm x 1,275 cm, completed between 1923-1924, Room One, north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) The dark open oval water lilies barely diminish in size towards the top edge of this painting.

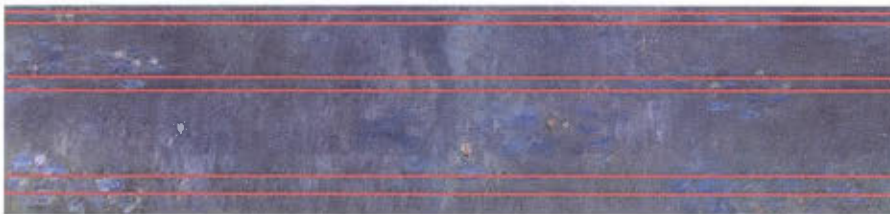


Figure 3.39 Claude Monet, *Reflections of Trees*, 197 cm x 850 cm, completed between 1922-1924, Room two, west wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) The diminishing of the water lily pads and flowers is relatively small, giving the appearance of a shallow field.



Figure 3.40 Claude Monet, *Morning with Willows*, 197 cm x 1,277 cm, completed between 1916-1926, Room Two, north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) An abrupt diminishing of water-lily pads near the top of the painting gives this painting a sense of infinite space.

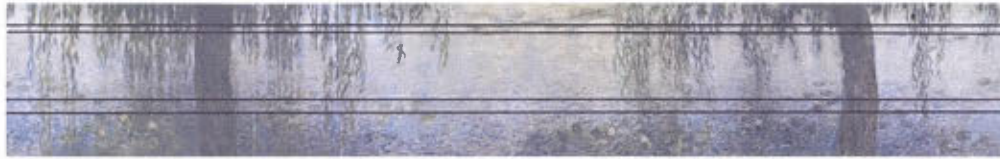


Figure 3.41 Claude Monet, *Morning with Willows*, 197 cm x 1,277 cm, completed between 1916-1926, Room Two, north wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.) In this painting Monet uses the same scaling device as in *Clear Morning with Willows*, located on the opposing wall, achieving the same sense of infinity.



Figure 3.42 Claude Monet, *The Two Willows*, 197 cm x 1,690 cm, completed between 1924-1926, Room Two, east wall, The *Nymphéas* Installation at the Orangerie, Paris, France. (Taken from Stuckey, 1988.)



Figure 3.43 Detail of *The Two Willows*. Here the size of the water lily pads diminishes dramatically, creating the perception of great pictorial depth.



Figure 3.44 A view of the installed east wall in Room One, showing *Green Reflections*. The surface of the pond, despite curving away, appears relatively close to the viewer.

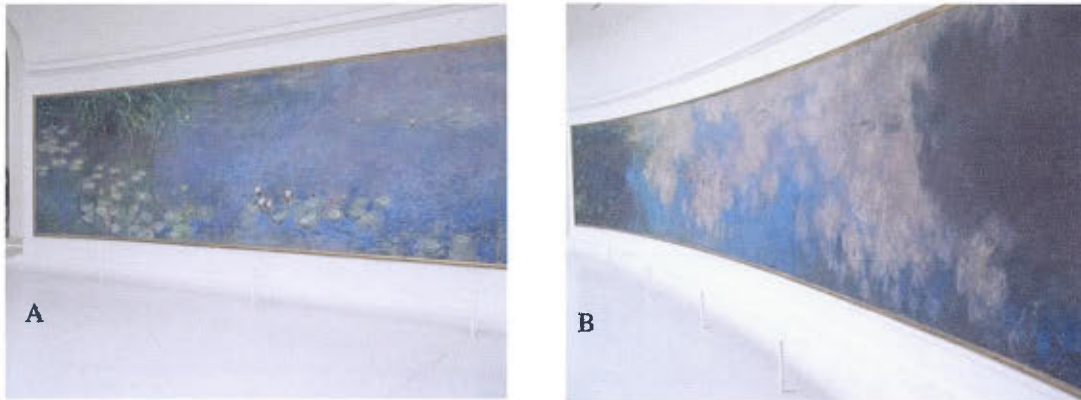


Figure 3.45 Installed views of *Morning* (A) and *The Clouds* (B) in Room One.

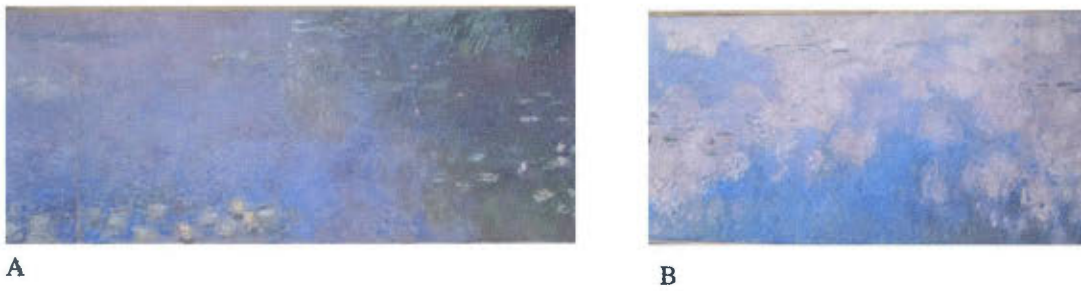


Figure 3.46 Detail of *Morning* (A) and detail of *The Clouds* (B). Despite the shorter axis of the room, these surfaces in A and B create an expansive sense of pictorial depth.



Figure 3.47 An installation view of Room Two.

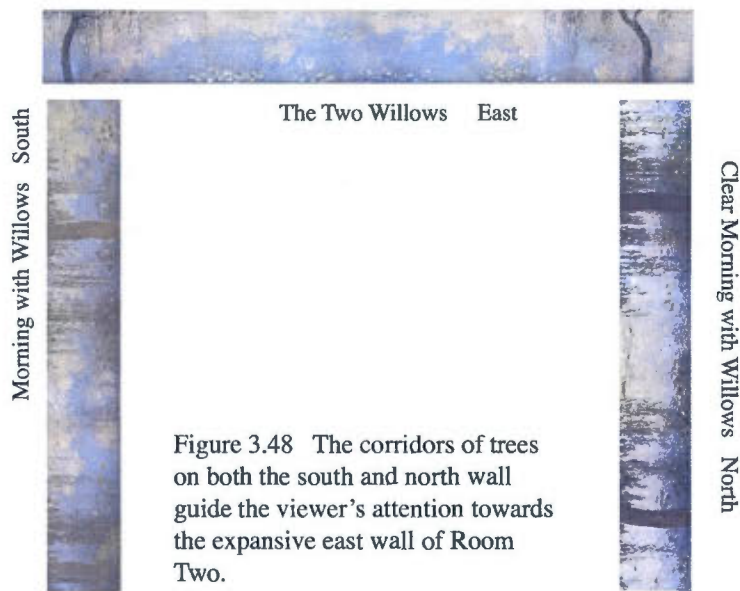


Figure 3.48 The corridors of trees on both the south and north wall guide the viewer's attention towards the expansive east wall of Room Two.

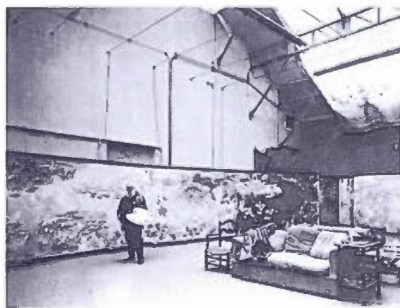


Figure 3.49 Monet's height is discernable from his relationship to the paintings in this photograph. The painting for the water lily series that he is standing in front of is known to be two meters in height. (Taken from Spate, 1992.)



Figure 3.50 (A) The water lily pond and the Japanese bridge circa 1895. (Taken from Orr and Tucker, 1995.) (B) View from the west towards the Japanese bridge, 1933. (Taken from Stuckey, 1985). (C) Photo of the pond, 1995. (Taken from Orr and Tucker, 1995.) The large tufts of grass at different locations on the pond can be seen in all three images above.



Figure 3.51 Detail of *Green Relections*. The vertical marks are consistent and regular, and do not diminish in size.

Figure 3.52 Detail of *Reflections of Trees*. The vertical marks are consistent and regular, and do not diminish in size.



Figure 3.53 Details of *The Clouds*. The sensation is of falling into but also simultaneously gliding across the surface of the water.

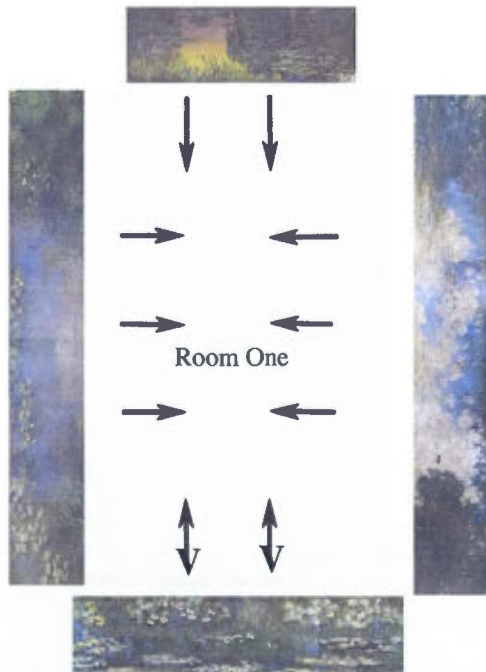


Figure 3.54 The water's surface flows and emanates light towards the room's centre, the exception being the east wall that flows in or out.

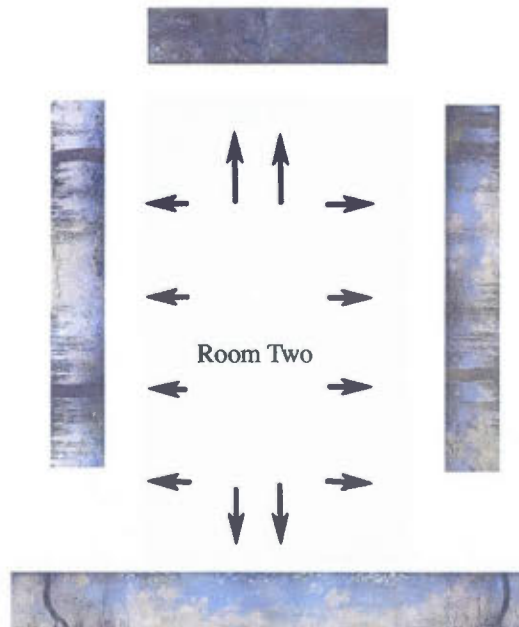


Figure 3.55 The viewer is transported outwards by the water's surface expanding away from the centre of the room.



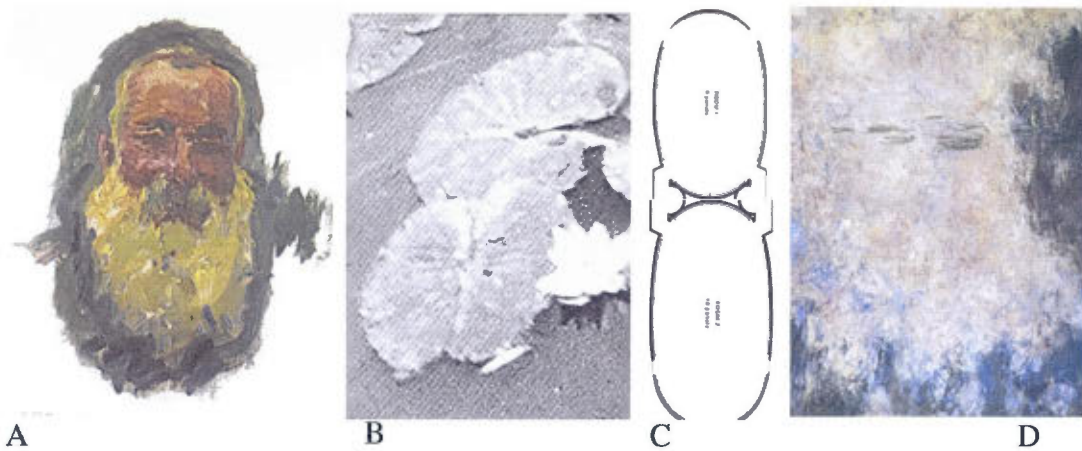


Figure 3.56 (A) Claude Monet, *Self Portrait*, 1917. (Taken from Wildenstein, 1985.) (B) a detail of Monet's photograph of the water-lily pond. (Taken from Spate, 1992.) (C) Plan of Room One and Room Two. The shape of the water-lily leaf resonates with both Monet's self portrait (A), and the combined shape of Room One and Room Two (C). It has always been impossible for me to see this cloud formation in *The Clouds* on the right side of the painting without considering it as a kind of portrait of the artist.



Figure 3.57 Claude Monet, *Camille Monet on her Death Bed*, 1879. (Taken from Wildenstein, 1985.) The distance between each stroke and the implied distance between the layers of these strokes suspends Camille's figure in a blue "world" space.



A



B



C



D



E



F



G



H

Figure 3.58 Details from Room One are: (A) *Green Reflections*; (B) *The Clouds*; (C) *Morning*; (D) *The Setting Sun*; Figure 3.107, Details from Room Two (E) *The Two Willows*, (F) *Morning with Willows*, (G) *Clear Morning with Willows*, (H) *Reflections of Trees*.

Figure 3.59 The details shown here (E, F, G, H) are of the most articulated representations of vegetation in Room Two. When comparing these to Room One (Figure 3.106: A, B, C, D), it becomes clear that the representations of vegetation in Room One have a greater sense of detail and three dimensional material presence, with the exception of the tree trunks on the north and south side represented in Room Two.



Figure 3.60 We can apply Goethe's colour theory of complementary shadows: 1) *Clear Morning with Willows*: orange-brown stem with blue edges; 2) *Morning with Willows* the stem is a lighter, brighter orangy-brown on the edges against the bluish water; 3) this is also true although more subtle for *The Two Willows*: a yellow-orange on the left side of the tree's stem and edged with blue, its complementary colour, on the right side of the stem.



Figure 3.61 Monet painting by the water-lily pond, 8 July, 1915. (Taken from Spate, 1992.)



Figure 3.62 Above left: detail from Room One, south wall, *Morning*; below right: detail from Room Two, south wall, *Clear Morning with Willows*.





Figure 3.63 Detail from *The Two Willows*, Room Two.

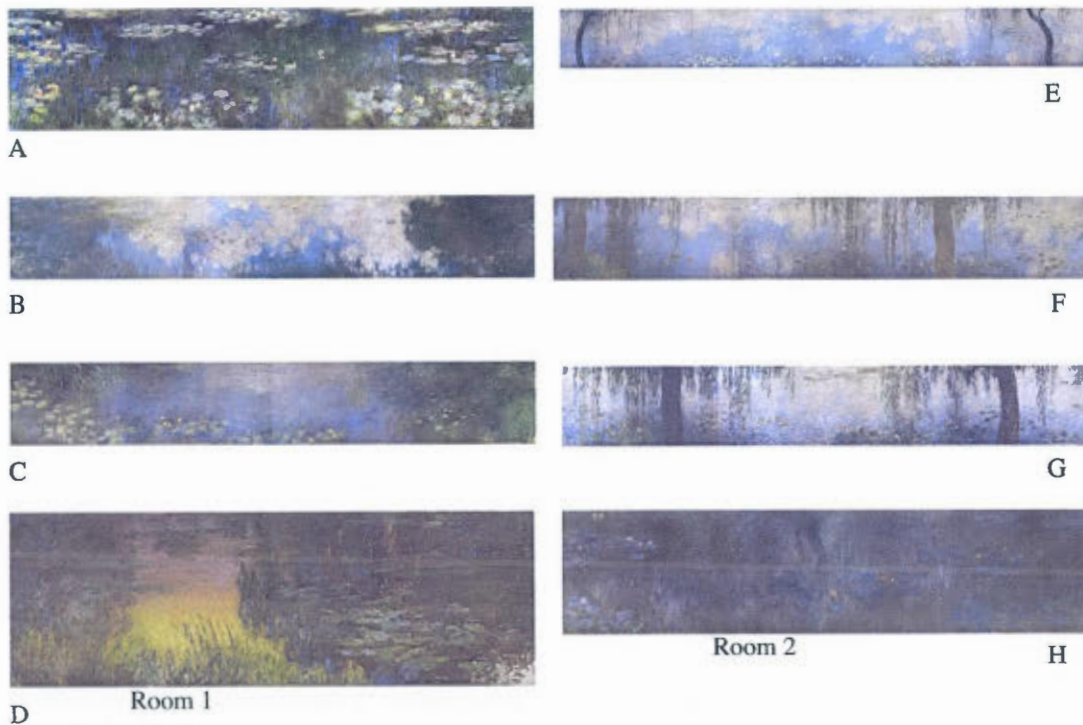


Figure 3.64

Room One: (A) *Green Reflections*; (B) *The Clouds*; (C) *Morning*; (D) *The Setting Sun*.

Room Two: (E) *The Two Willows*; (F) *Morning with Willows*; (G) *Clear Morning with Willows*; (H) *Reflections of Trees*.

A study and comparison of all eight paintings fails to show any overt horizon or clear evidence of a shore. The lily pads are in fact the most prominent defining features, marking an otherwise uncertain and intangible surface.

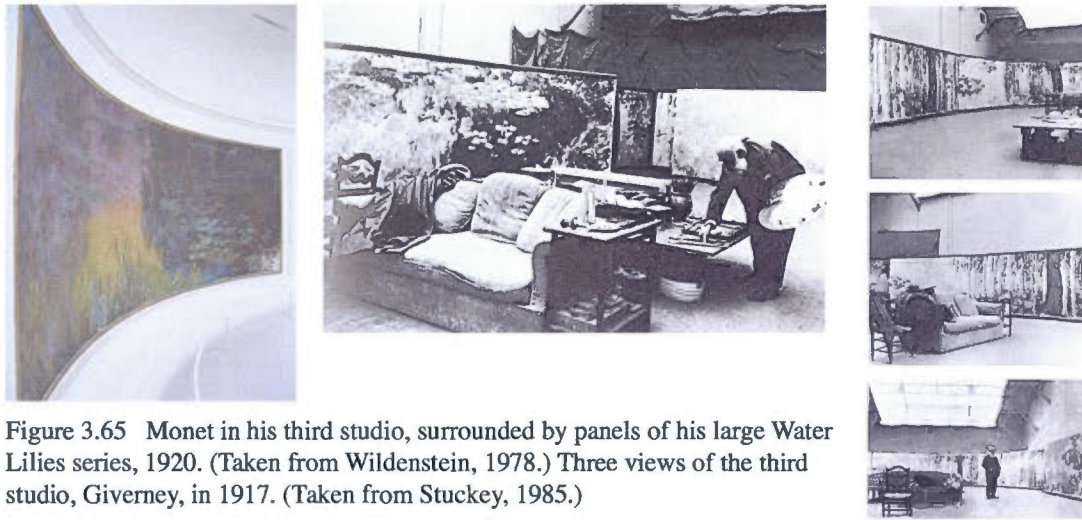


Figure 3.65 Monet in his third studio, surrounded by panels of his large Water Lilies series, 1920. (Taken from Wildenstein, 1978.) Three views of the third studio, Giverny, in 1917. (Taken from Stuckey, 1985.)



Figure 3.66 (A) Detail of installation view of *Green Reflections*, Room One; Figure 3.67 (B) Detail of installation view of *Reflections of Trees*, Room Two. Both are located on curved walls that essentially back onto each other like inverted C's, each drawing or 'funneling' the viewer in.

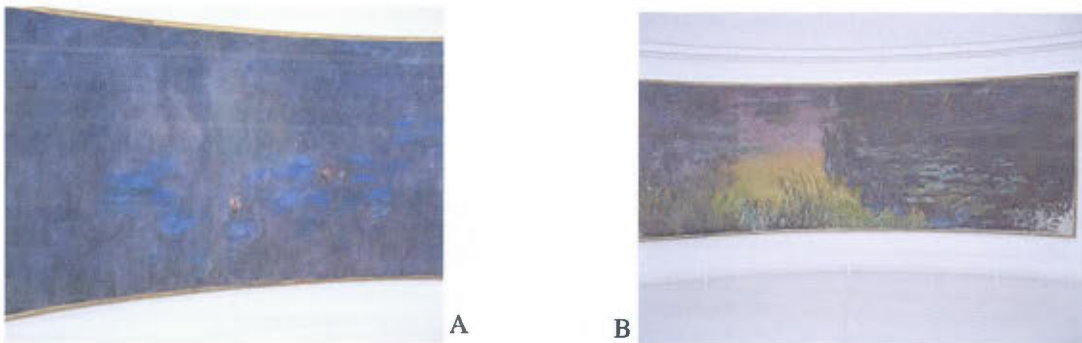


Figure 3.68 (A) The grey-blue of *Reflection of Trees* is typical of early morning. There is not sufficient light at this time of day to give more saturation to the colour of objects and consequently define their specific shape. Figure 3.69 (B) *The Setting Sun* has all the characteristics of the warm, spectral quality of evening light.



Figure 3.70 This is a view looking towards the west end of Room One with *Morning* on the left, *The Clouds* on the right, and *The Setting Sun* at centre. It is also this view that the visitor experiences as they leave the installation. Overall, the quality of colour in this room is more saturated than in Room Two.

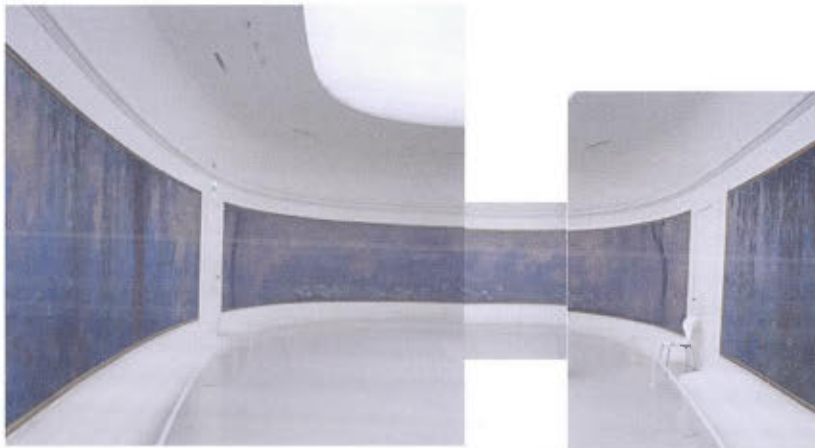


Figure 3.71 The quality of the colour in Room Two is, overall, the less saturated colour of morning. A primarily bluish cast typical of morning light pervades the room.



Figure 3.72 Installation view of *Green Reflections*, located on the east end of Room One. This is the pond at the darkness of dusk, with the water lilies illuminated by the last rays of light.

Figure 3.73 It is possible here to compare the saturated colour of *Green Reflections* in Room One, representing the last light of day, with (see above in Figure 3.85) *Reflections of Trees* and the least saturated colour of the first light of day.



Figure 3.74 (A) *The Clouds*, north wall in Room One, have a more yellowish cast when compared with the warmer rosy cast of the clouds represented in *Morning with Willows* (B) on the north wall of Room Two.



Figure 3.75  
*The Clouds*,  
north wall,  
Room One.



Figure 3.76  
*Morning*,  
south wall,  
Room One.

The placement of the paintings on north and south walls reflects the different effects of light that one would experience of evening light in the landscape. This is directly determined by the sun's relationship as it changes to these absolute directional markers in the course of the year, at times being nearer or further away.

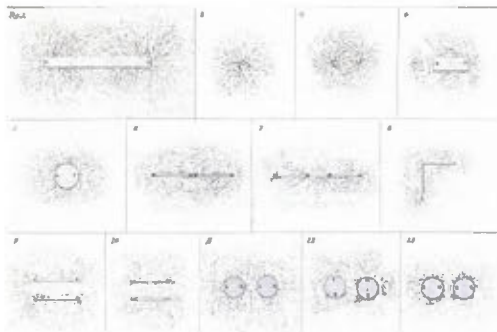


Figure 3.77 Faraday's delineation of lines of magnetic force by the use of iron filings (1852). (Taken from Harman, 1982.)



A



B

Figure 3.78 Details of *The Setting Sun*; (A) The horizontal marks reinforce the sense of surface. On the other hand, in (B) the vertical marks penetrate the surface of the water.



A



B

Figure 3.79 Details of *The Clouds*; (A) is *on* the surface. (B) is *through* the surface into undefined territory. In Monet's *Nymphéas* paintings, the material – plant life and water – are visually modified by the immateriality of light. Yet both can only be spoken about through the materials of painting. It is the transmission of movement through the brushstroke that translates back into the imaterial energy of light to the viewer.





Figure 3.80 Detail of *Morning*. While light is technically reflected, nevertheless – due to layering – the darker marks on top of the lighter coloured blue surface of the water creates the impression that light emanates and oscillates both from below and on the water’s surface .



Figure 3.81 Details of *Green Reflections*. The dense vertical marks are interrupted by the lily pads, which are painted with quick circular brushstrokes. The repetitive vertical gesture and the repetitive horizontal gesture set up two distinct and contrary fields of energy in motion.



Figure 3.82 Three details from *The Two Willows*. The left detail is from the left of the painting, the middle detail from the centre, and the right detail from the right hand side. All the brushstrokes are soft and follow a circular movement.



A

B



Figure 3.83 Detail of the pictorial field of *The Two Willows* on the east wall. (A) The painting is curved in two ways: by the shape of the trees on either side, and by the pictorial concavity or convexity formed by the clouds at the top edge and the lily pads on the bottom edge – as well as by the perspectival suggestion created by the falling willow branches. (B) The lily pad that is discernable in the distance appears to correspond to the viewer’s eye level – the horizontal line indicated on the illustration.

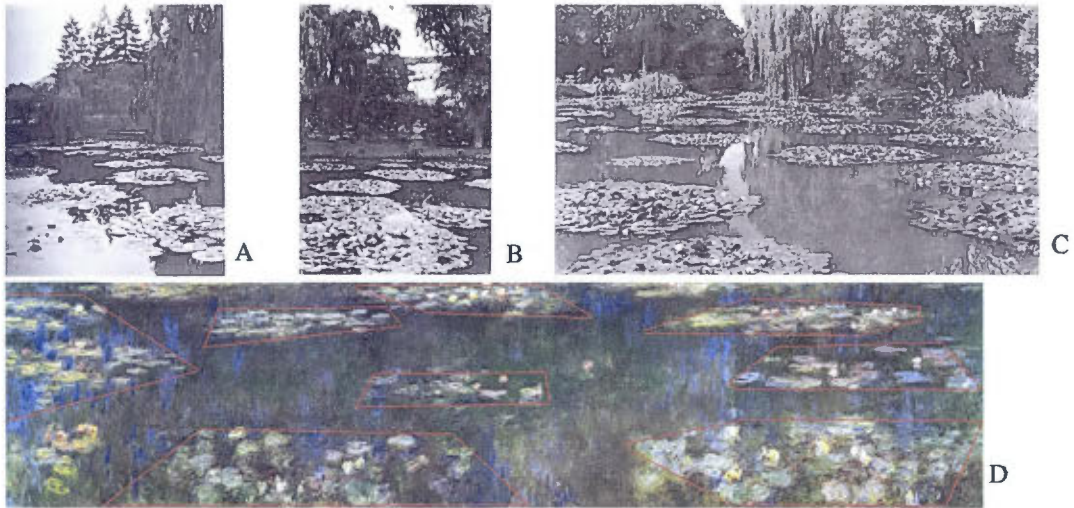


Figure 3.84 (A) Photograph taken from the north bank of the water lily pond at Giverny in 1900. (Taken from Wildenstein, 2003.) (B) View towards Monet's house from the water lily pond, 1933. (Taken from Wildenstein, 1978.) (C) Full length view of the water lily pond. (Taken from Orr and Tucker, 1995.) The smoothness of the water's surface in the photographs gives a singular spatial surface continuity to the location of the water lily pads. This contrasts with the variety of spatial locations of the lily pads in the paintings – in this case *Green Reflections* (D) of the *Nymphéas* paintings. My first hand observation of the paintings suggested to me the experience of an activated surface due to the subtle but strong sense of individual spatial dislocation of each lily pad, quite unlike a continuous smooth surface.



Figure 3.85 The lily pads mark not only the surface of *Green Reflections*, but also lead the eye in a circular motion across it, propelling the viewer to its outer or upper-most edge and coming back to the bottom-most edge only to continue this movement around the least dense lily pad at its centre.



Figure 3.86 The contrast between the scale of the lily pads (B) at the centre of *The Clouds*, and those at both the left (A) and the right edge (C) (all kept in scale to the over all painting) emphasizes the sense of material proximity (A) and (C) compared to the sense of distance indicated by the lily pads in (B).

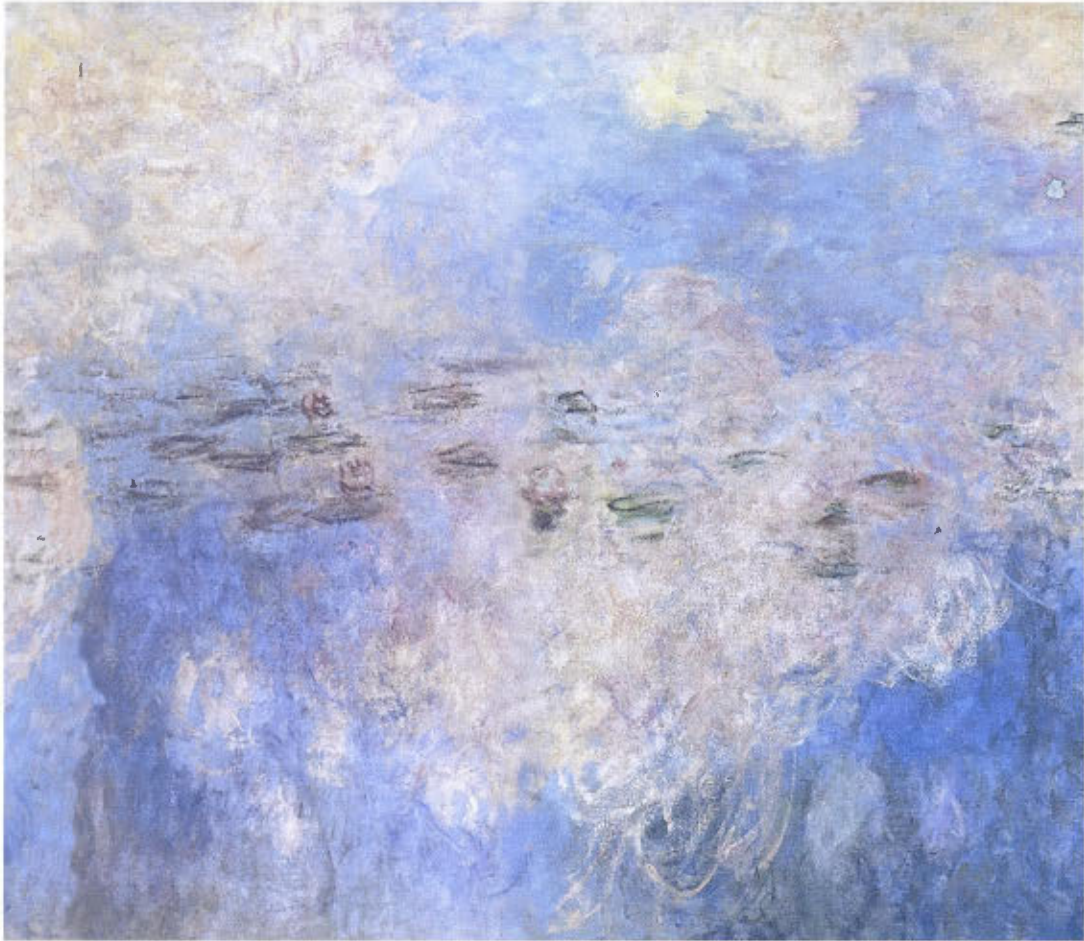


Figure 3.87 In *Morning*, on the left side as shown in the detail above, the large scale of the lily pads gives this area of the painting the greatest sense of proximity.



Figure 3.88 The physical presence of the tree trunks in the *Morning with Willows* not only lends an implied reference to a shore but becomes a device for framing the scene.



A



B

Figure 3.89 Compare the full *Clear Morning with Willows* (A) with the cropped version (B). The central space between the willows in (A) when compared to (B) appears much flatter than the central space of (B) that curves out towards the viewer.



Figure 3.90 *The Two Willows*. Shape is bent where the trees are close to the outer edge, and as a result things seem simultaneously coming towards the viewer's space and moving away.



Figure 3.91 G.G. Zumbo (18th century), (A) *Triumph of Time*; (B) *The Plague*; (C) 18th century wax models of a woman's body. All models are made of wax. (Taken from Poggesi and Duering, 2001.)



Figure 3.92 These details of the right and left side of *The Clouds* show dense thick murky vegetation both below and above the water's surface.



Figure 3.93 The centre of *The Clouds*: fluffy, light, and translucent, it is in stark contrast to its edges (above).



Figure 3.94 Details of *Morning*. Monet provides startling contrast on the edges between dense thick primeaval vegetation and clear clean cleansing infinite water.



Figure 3.95 The centre of *Morning*, when isolated from its edges (above), has the appearance of crystal clear water.



Figure 3.96 The pictorial construction of *Morning* carries the water with its vegetation towards the viewer.



Figure 3.97 The pictorial construction of *The Clouds* and the embracing dark edges carries the water's surface towards the viewer.



Figure 3.98 In *The Setting Sun*, the intensity of the sun's reflection its relative light hue value moves the surface of the water towards the viewer.



Figure 3.99 Because of the apparent proximity of the water lily pads at the top edge of *Green Reflections*, the viewer is pulled towards this edge – creating the sensation of moving both inward and outward towards Room Two.



Figure 3.100 The elliptical, loopy, diffused edges in the rendering of the reflected clouds in *The Clouds* permits the viewer to willingly fall into and be embraced by their softness.

Figure 3.101 In *Morning* the elliptical half-open, half-closed marks define the water's surface by skidding horizontally across it, creating the impression and sensation of undulating wavelets that activate this surface.



Figure 3.102 The marks that define *The Setting Sun* are horizontal, vertical and diagonal – pushing against each other elicits the memory of the power of the presence of the sun even when, and perhaps especially when, reflected.



Figure 3.103 Everything about *Reflections of Trees* is uncertain and dreamlike. The colour is between blue-red and violet, the marks are feathered and undefined in that it is difficult to discern their beginning or end.

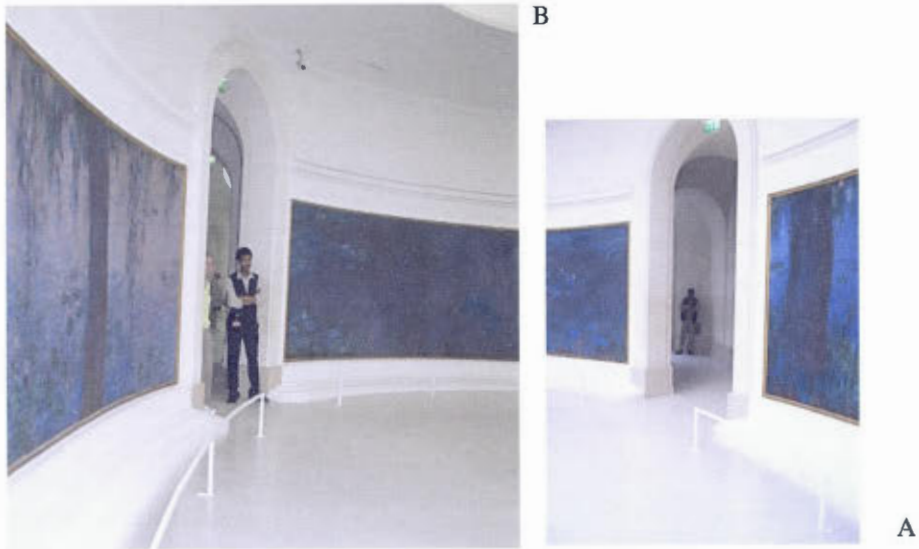


Figure 3.104 Image (A) on the right: *Morning with Willows* on the right of the doorway is a transition of tonal values with respect to *Reflections of Trees*.  
 Figure 3.105 Image (B) on the left shows the transition of *Clear Morning with Willows* on the left of the doorway with *Reflections of Trees* on the right.



Figure 3.106 Photo-montage of Room Two, looking towards *The Two Willows* as it wraps around the east wall, while *Morning with Willows* on the left wall with *Clear Morning with Willows* on the right together create the corridor effect I speak of.





Figure 3.107 Above, *The Two Willows* detail to the right detail to the left of painting.



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