

STILL LIFE AS A MODEL OF SPACETIME

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1. INTRODUCTION

Still life is the most philosophical genre of traditional figurative painting. It saw some of its most famous manifestations in the Flemish tradition of the XVII century, but it evolved and survived as a meaningful presence through much of XX century art, adopted by avant-garde movements such as cubism and dadaism.

The purpose of this essay is to dig into the philosophical meaning behind the still life painting and show how this genre can be regarded as a sophisticated method to present in a pictorial and immediately accessible visual way, reflections upon the evolving notions of space and time, which played a fundamental role in the parallel cultural developments of Western European mathematical and scientific thought, from the XVII century, up to the present time.

A challenge for the artists of today becomes then how to continue this tradition. Is the theme of still life, as it matured and evolved throughout the dramatic developments of XX century art, still a valuable method to represent and reflect upon the notions of spacetime that our current scientific thinking is producing, from the extra dimensions of string theory to the spin foams and spin networks of loop quantum gravity, to noncommutative spaces, or information based emergent gravity? Some may feel that the notions of spacetime contemporary physics and mathematics are dealing with nowadays are too remote from the familiar everyday objects that form the basic jargon of still life paintings. However, much the same could be said about the notions of relativistic spacetime and the bizarre world of quantum mechanics that were trickling down to the collective imagination in the early XX century, and yet the artists of the avant-garde movements of the time were ready to jump onto concepts such



FIGURE 1. Joris van Son, “Still Life of fruit”, 1663.

as non-euclidean geometry, higher dimensions, and the like, and bring them into contact with a drastic revision of what it means to “represent” the everyday objects that surround us, and that come to occupy a profoundly altered concept of space and time. So, I believe, the challenge is a valid one, even in the light of the ever more complex landscape of today’s thinking about the concepts of space and time, and I take the occasion to make an open call here to the practicing artists, to take up the challenge and paint a new chapter of the “still life” genre, suitable for the minds of the current century.

2. TIME AND TRANSIENCE

As it is well known, the other technical name of the “Still Life” genre is *Vanitas*. This word more aptly describes the philosophical nature of these deceptively simple images of compositions of objects of everyday life, as conceptual representations of the nature of time. *Vanitas* refers primarily to the transient nature of time, the fugitive instant, the brevity of life, the ephemeral pleasure of enjoying the reality of instantaneous moments that do not and cannot last. Upon this basic theme, *tempus fugit*, there lies a multilayered analysis of what one can understand as time, an elaboration that, as we shall see, parallels the many aspects of time, as we have learnt to distinguish them within the tradition of scientific discourse.

2.1. Time as a collection of instants. First and foremost, there is the idea, which all of us maintain, that time is a collection of instants, each a still image, which is immediate and immanent but without extension: the very idea of instantaneous – something which does not last. A way of representing pictorially this notion is by presenting a collection of everyday objects chosen for their quality of embodying the very notion of something transitory, which exists only in a brief instant of time.

A good example are floral compositions. These form an important element throughout the history of the still life genre. In the Flemish compositions, the idea of time as a collection of instants is often expressed by inserting in the composition a floral arrangement where the different flowers in the bouquet are known to bloom in different seasons, at different times of the year. This produces the effect of representing time not as a linearly ordered



FIGURE 2. Margareta Haverman, “Still Life: a vase of flowers”, 1716

succession of events, or by means of a single simultaneous instant (which would have the effect of abolishing time completely), but through the coexistence of a plurality of instants belonging to different times. This is consistent, as modern neuroscience teaches us, with the internal representation of time in our memory, which we imagine stores a faithful recording of the linear ordering of events, but which in fact resembles much more the floral compositions of the Flemish Still Lives, with a simultaneous superposition of unordered but distinct time events.



FIGURE 3. Ori Gersht, “Exploding Floral Composition, N.4”.

The theme of floral composition as a representation of instantaneous existence in time, and an embodiment of the concept of *Vanitas*, reaches its apex with the contemporary artist Ori Gersht, with the “Exploding Floral Compositions”, where 3-dimensional models of XIX century traditional still life floral compositions by Henri Fantin-Latour and then exploding them and photographing them right at the moment of explosion.



FIGURE 4. Cornelis de Heem, “Still Life with oysters, lemons and grapes”, circa 1660.

We know today, thanks to the fast advancing technique of femto-photography, that one can push this idea of capturing the instant of time to the point of photographing light itself in the process of moving at its extraordinary but finite speed through various materials. One can view this as the modern evolution of the idea the still life painters of the XVII century were trying to convey with their “collection of instants” embodied by perishable flowers in multi-seasonal floral compositions.

Other typical elements inserted in still life compositions to represent the transient instants of time are seafood (especially oysters) and fresh fruit. These also convey the idea of the perishable, captured in its brief moment of existence before decay,



FIGURE 5. Roy Lichtenstein, “Still Life with oysters, fish in a bowl and book”, 1973.

suspended in an instant frozen in eternity. The use of seafood in still life as an emblem of the perishable persists well into the XX century redefinition of the genre. It makes frequent appearance in Picasso’s Still Lives and continues to be a referent for the genre, through other artistic movements, like Pop Art, well into the second half of the XX century.

2.2. Linear time as process. In addition to the representation of time as a collection (a bouquet) of distinct individual instantaneous moments, another view of time pervades the traditional Flemish still life paintings, one that relates best to our understanding of time as a process of transformation. This image of time corresponds to mathematically representing time as an oriented line, with its linear ordering providing a meaning to the notion of before and after and of simultaneity. Much as this may appear as a very natural notion, one should keep in mind that it is precisely its implicit notion of “simultaneous events” that was challenged and transformed by the advent of relativity theory in the early XX century.

A way of representing linear time as a transformation process is to include in the painting elements that unambiguously point to a before and an after. Such are the depictions of half-eaten fruits or slices of cake, half-peeled lemons with part of the peel still pending, toppled glasses. Each of these images describes a process of evolution in time, which is caught in the act of becoming: an action is taking place, an action that begun in the past and that awaits completion in the future.

One can see this type of time representation in Pieter Claesz’s “Tabletop Still Life”, where, in addition to the perishables like oysters and fresh fruit, already discussed in the previous section, several items on the tabletop display stand “in the process of becoming”: a half eaten mince pie, a half peeled and sliced lemon, a partly sliced loaf of bread, a half empty glass.



FIGURE 6. Pieter Claesz, “Tabletop Still Life”, 1625.

2.3. The flow of time and music. Time is also perceived and described as a flow, and the most frequently used method for incorporating the concept of the *flow of time* in still life paintings is through a reference to music. There are various aspects of music that link it to time: unlike the appreciation of the visual art, which is essentially simultaneous and atemporal, and that one may classify as spatial perceptions (though of course a changing point of view in looking at a sculpture may form an important part of its aesthetic appreciation), music can only be perceived in time and through time.

Of all the traditional arts, it is the one that is more closely tied up to time. In the contemporary world, one could argue that other art forms, such as cinema, also have a fundamental



FIGURE 7. Pieter Claesz, “Still Life with musical instruments”, 1623.

temporal component, and that so did theater already in the earlier times, but music, being more abstract, and having essentially no spatial component to it, embodies better than any other art form the image of the flow of time. In times when there was no method to store acoustically (not in the written form of a score) a musical performance, music would also exemplify something that dissolves in time without leaving behind any tangible trace of its existence, hence connecting back to the more general idea of the *tempus fugit* and *Vanitas* themes.

It should therefore not appear surprising to see the insertion of musical instruments in compositions of edible goods and flowers, as all these things together collaborate in creating a complex and multilayered description of the nature of time.

In the more modern form of the early XX century avant-garde movement, the composition of still life paintings centered around musical instruments was broadly explored by the cubist painters,



FIGURE 8. Braques, “Still Life with violin”, 1914.

Braques and Picasso, most of all, but also Gris and Leger. The musical instruments in their composition are at the center of a fly-eye perspective of multiple viewpoints, which suggests multiple observers in space as well as multiple instants of time, seen through a more modern viewpoint whereby time and space have started to blend into two no longer separate concepts. Music is then no longer a purely temporal art, but also an embodiment of movement, viewed as a change of observer viewpoint through both time and space.



FIGURE 9. Picasso, “Still Life with mandolin”, 1924.



FIGURE 10. Juan Gris “Still life with Guitar”, 1920.



FIGURE 11. Pieter Claesz, “Still Life with skull and writing quill”, 1628.

2.4. Decay and thermodynamic time. Among the notions of time that modern scientific thought developed, perhaps the one that comes closest to our subjective perception, as well as to the notion of *Vanitas* we have been discussing here, is the concept of *thermodynamic time*. What is meant by this is the formalization, through the mathematical notion of *entropy* in thermodynamics, of time as consumption and decay, and the irreversibility of the arrow of time.

This notion was implicitly there throughout the history of the Still Life genre, through the idea that a *Vanitas* is a reminder of death and of the transient nature of life.

The decay element is often introduced in Still Life paintings through a skull image placed among the ordinary objects of the tabletop arrangements, as the ultimate symbol of what is left of life after time has run its course and completed its process of slow consumption and decay. The skull is the ultimate pointer to the irreversibility of the time arrow.



FIGURE 12. Cézanne, "Still Life with skull".



FIGURE 13. Picasso, "Still Life", 1945



FIGURE 14. Adriaen Coorte, “Still Life with seashell”, 1698.

2.5. The algorithmic time of seashells. There is yet another way in which we have come to understand the unfolding of time, which is through the processing of an algorithm, said in modern information theoretic language. A natural process of growth that follows an algorithmic regularity, which we nowadays like to think of in terms of cellular automata and discrete dynamical systems, is the growth of seashell. The algorithmic regularity of geometric form and patterns in sea shells have long fascinated scientists and naturalists alike. The frequent insertion of seashell as a theme in still life can be seen as describing yet another aspect of time, which is stark contrast with its view as thermodynamic decay and slow destruction. In fact, the regular geometric growth of seashell is an example of time evolution that encodes and does not lose information, which is to say, does not represent an increase of entropy but of its opposite, information.



FIGURE 15. Max Ernst, “Sea Shell”.

The algorithmic growth of seashells is a process that represents, once again, the unfolding of time, but now in a creative rather than destructive form: the creation of structure and the execution of a code, a program, into a mechanism of growth. A process of creation and evolution of form through time.



FIGURE 16. Adam Bernaert, “Vanitas”, 1660.

2.6. The flow of time as a flow of knowledge. Time is also perceived as the vehicle for the accumulation and transmission of knowledge, represented by the reading and writing of books: the main instruments for the storage and acquisition of knowledge ever devised in human history.

Several Still Life paintings include collections of books, partly opened, as if in the process of being read, and often accompanied by writing instruments, representing the process of transformation that leads to the production of new knowledge.

Altogether, all these different representations of time encoded in various collections of objects in the Still Life compositions reveal a remarkable complexity of philosophical concepts, completely in tune with what the thinkers of the time, be it Descartes or Spinoza in the XVII century or Boltzmann and his concept of



FIGURE 17. Unknown Dutch Master, “Still Life with Books”.

entropy, between the XIX and the XX century, and later Einstein and the newly emerging notions of spacetime in the early XX century. We have so far focussed on concepts of time. We now turn our attention to how the Still Life genre has been expressing the concept of space.



FIGURE 18. Hans Holbein, “The Ambassadors” (detail), 1533.

3. SPACE AND TIME

The XVI and XVII century saw a profound revolution in our understanding of the concept of space, which sees its focal point in Decartes and the origin of our modern idea of *analytic geometry*: the idea of space as a quantifiable entity, as specified by coordinates, by a frame that permits quantitative measurements of relative positions, not only of distance and extension.

Instruments of representation of space thus begin to appear in Still Life compositions, as in the detailed tabletop arrangement of mathematical instruments in Holbein's famous painting "The Ambassadors" (which is in itself not a Still Life, but it incorporates compositions in the Still Life genre, along with the portrait and the prominent skull anamorphosis, in an elaborate dialog of spatial connections).

As part of the Cartesian concept of coordinate frames, one acquires the possibility of describing space as *dynamical*, and positional relations as evolving in time according to laws of motion. This in time developed into the edifice of *classical mechanics*, with its Lagrangian and Hamiltonian formalism, with position and phase space and with motion described by trajectories of points in a coordinate frame.

By the end of the XIX century, this conception of space had evolved to a very high level of sophistication, with curved spaces (Riemannian manifolds) and their non-Euclidean geometries co-existing with the original flat and homogeneous Euclidean space. It is against this background of geometric knowledge that the novelty of special and general relativity in physics came to establish a new conception of spacetime, but this also set the stage upon which the language of modern art was developed. The concept of space as evolving and unfolding in time became a crucial theme in the art of the early XX century, especially through Futurism, and the use of the familiar objects in the Still Life representation became a way of exploring the dynamical properties of space, as in Boccioni's famous "development of a bottle in space".

In the Dutch Still Life of the XVII century, a great attention is given to spatial relations between the displayed objects,



FIGURE 19. Boccioni, “Development of a bottle in space”, 1912.

where they stand in relation to one another, relative to an absolute background coordinate frame fixed by the environmental elements: tabletop, walls. In the transition to XX century art, the objects of Still Life compositions begin to define space itself through their properties of volume (Cézanne) or color (Matisse).

The idea of defining space through the volumetric and relational properties of the displayed objects persists well into the century. Guttuso creates a space primarily through a relational representation of volumes realized by a collection of everyday objects, but the presence of a barely sketched background, where a dark area on the right side suggests the opening up of a larger space behind, creates a dialog between the relational space and an absolute frame of reference. In addition, he makes an additional political statement, in transferring the mundane objects



FIGURE 20. Guttuso, "Still Life with cans".

of still life composition from bourgeois household to proletarian workplace. On the other hand, the 1947 Picasso still life achieves a further level of abstraction in the genre, where the depiction of space is openly seen as the ultimate goal, the objects transformed into unrecognizable volume-shapes whose manifest purpose is the creation of space, along the line of our relativistic conceptions, according to which matter bends the geometry of space, hence creating gravity, which in turn influences matter in a dynamical



FIGURE 21. Picasso, “Still Life”, 1947.

way. Space in this still life is created by massive volumes with no other meaning left but their bending of spacetime itself.

Along with the traditional elements of Still Life compositions, the XX century introduces new “objects”, especially machines. Especially Fernand Léger, who in his *Ballet Mécanique* had explored the poetry and musicality of machines and their essential ability to define space through their movement and shape, resorted frequently to the use of the machine as an element of Still Life composition, precisely to the purpose of a conceptualization of space.



FIGURE 22. Fernand Léger “Still Life in the Machine”, 1918.

Space becomes defined *by* the machine and it resides *in* the machine, which is again a dynamical entity, based on rhythmic movement and repetition.



FIGURE 23. Morandi, “Still Life”, 1929-1930

3.1. Existence as space without time. In contrast with the dynamical space of the Futurists, there is an absolute stillness, which can only be defined as space in the absence of time, which emerges in the many Still Life paintings of Morandi, mostly arrangements of bottles, vases and glass containers on a barely defined tabletop, with usually no other clear delimitation of surrounding space. It is an indefinite space, an *apeiron*, as far as the background framing is concerned, while it is a tightly bound image of proximity relations in the cluster of objects occupying and defining the center stage of the painting. There is little room for both volume and color to play a role in these paintings, where the depth of space is meager and a diffused light permeates a muted balance of ochre tints. Space here is absolute stillness.



FIGURE 24. Cézanne, “Rideau Pichet”.

3.2. Cézanne’s curved space. Throughout the history of philosophical thinking about space, as well as in the concepts of modern physics, one repeatedly encounters a dialectical counterposition between a *relational* and an *absolute* notion of space. In the relational viewpoint, space itself is created by the interactions between matter and forces, in the sense that there is no absolute reference frame, but the frame itself is bent and transformed by the bodies that occupy it. Measurements of space are measurements of events that happen in space. In contrast, there is a point of view in which space itself is an entity of interest even in the absence of anything else: the vacuum is one of the most interesting phenomena of modern physics, with its own energy due to the bubbling of virtual particles. Empty space can be curved into interesting and non-trivial geometries, even in the absence of any actors on its stage of existence.

In the Still Life of early XX century art, a relational notion of space also comes to play an interesting role. The framing of the scene is no longer an absolute coordinate system, but it is created by the relations between objects: their volumes and their masses make the space measurable and concrete. In Cézanne's "Rideau pichet", the background drapery is no longer just a fixed frame. It becomes another object of the composition, in active dialog with the others. There is no external reference frame, no absolute set of coordinates, other than relative positions and relative masses. The geometry of space that emerges from these representation, in turn, tends to be curved around the objects, as if they would be bending the surrounding space. Modern art arises on the wake of the late XIX century thinking about space, with the development of curved geometries playing a central role that lead to a richer formulation of classical mechanics, where phase space is naturally curved by the kinetic energy, and paved the way to Einstein's revolution, where it is spacetime itself that is bent and curved by masses and gravity.

3.3. Matisse's emergent flat space. A notion that also developed in XX century scientific thought, and which is very much at the center of current developments in the theory of gravity is the idea that space (or spacetime) need not be a primary concept, but it may instead be an *emergent* phenomenon, which may be of *information* theoretic origin.

One may perhaps see traces of an idea of "emergent" space in Still Life paintings when one looks at how Matisse dealt with themes and compositional elements very similar to those we just saw in Cézanne, but approached from a completely different viewpoint. Space, as represented in Matisse's paintings, is not tied up to volumes and masses. Everything is perfectly *flat* and deprived



FIGURE 25. Matisse, “Still Life with fruit”.

of any reference to 3-dimensionality, and yet space emerges from relations and interactions, not of spatial locations, but of *colors*. Thus, in Matisse’s approach, it is the spectrum of light, with the contrast created by juxtaposed masses of color that creates space.

From a scientific viewpoint, it would appear that color, which means light and electromagnetism, has little to do with space, which means gravity, and yet that is clearly not the case in Einstein’s theory of relativity. Not only because Maxwell’s equations of electromagnetism are already intrinsically relativistic, but also because light bends with gravity and the properties of light, like its finite propagation speed, are crucial to determining properties of spacetime in relativity theory.

Of course, this brief excursion into modern physics and relativity, is far remote to what had been on Matisse’s mind in creating his color based emergent space, and it is only meant to bring to



FIGURE 26. Matisse, “Still Life with blue tablecloth”, 1909.



FIGURE 27. Matisse, “Blue Still Life”, 1907.

the attention of the reader the fact that our modern scientific understanding of space and time is connected to light just as much as it is connected to gravity.

More to the point of the discussion of the Matisse paintings, it is worth mentioning that our visual perception of light and colors very often contributes substantially to generate our own subjective and psychological perception of space.

3.4. The Cubist spacetime. Much has been said about the possible relations between the development of the Cubist movement in modern art and the almost simultaneous development of the two main pillars of modern physics: relativity and quantum theory. Although it is generally understood that there was no direct influence of the scientific texts on the group of artists, it seems that a body of scientific knowledge that precedes those developments and that was very actively popularized in the late XIX century, having to do with curved spaces and higher dimensions, might have reached the art world more directly, by the time Cubism began to flourish.

What appears certainly true is that some of the *concepts* about space and time that were being discussed actively by the Cubist artists were also at the same time receiving a lot of attention within the development of relativity theory. Among these, the concept of *simultaneity*. A typical Cubist painting exhibits a subject seen simultaneously from the point of view of many observers in different spatial and temporal positions. Shapes appear broken and superimposed on themselves; the scene is static and at the same time it evolves. Most significantly, perhaps, the strict distinction between space and time appears to be broken. Of course, we cannot help but look at these paintings from the perspective of our modern post-relativist conceptions, hence it



FIGURE 28. Braques, “Still Life with violin and jug”, 1910.

is natural for us to see in them a portrait of spacetime, rather than a space and time, and one where the notion of simultaneous observers is brought into question.



FIGURE 29. Picasso, “Still Life with bottle of rum”, 1911.

3.5. Dadaism: spacetime as information. The Still Life genre also makes an appearance in one of the most unlikely places within the landscape of the XX century avant-garde: Dadaism.

Within Dadaism Still Life becomes *conceptualized* and abstract. The space defined by a Still Life composition is a purely informational space. The shapes are no longer, or barely, belonging to everyday objects, and when they are, these have undergone a process of redefinition that alienates them from their everyday role and renders them unrecognizable, except as concepts.

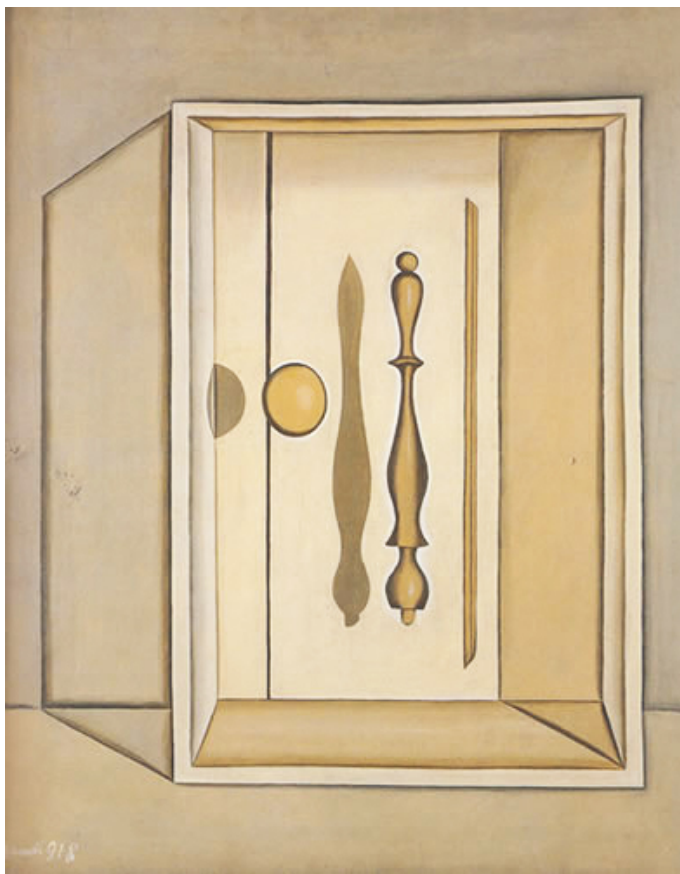


FIGURE 30. Morandi, “Still Life”, 1918.

When Morandi, before turning to his better known realistic Still Lives, composed his early Dadaist Still Life in 1918, he definitely created a vision of space. Three abstract shapes float



FIGURE 31. Man Ray, “Still Life”, 1933.

suspended inside a frame. Space perception, thickness and volume, are generated through the artifact of shadows, that each shape, as well as the frame itself, cast upon a background wall, whose existence is only highlighted by its role as the recipient of the projected shadows. The shapes are purely abstract and yet, the central one, which mediates between the curved and the flat,

is vaguely reminiscent of a chess piece. The relational positions between these shapes, which complete an invisible triangle delineated by the shadow lines on the floor, is what generates the perception of a dynamical form of space.

Equally interesting is Man Ray's take on the Still Life theme, where a tabletop composition of elements appears to fit more closely within the traditional compositional rules of the genre. Yet the objects themselves are highly conceptualized shapes, with mathematical polyhedra (in themselves an excellent representation of space, also used in the old paintings, see the Holbein example we discussed earlier), accompanied by an assortment of lightbulbs, children toys, mannequin hands. More than a Still Life this is of course a portrait, a self portrait translated into a dadaist reconfiguration of the language of Still Life painting. As such, it should perhaps be regarded more as a representation of an inner space rather than an external physical one.

3.6. Theoretical spacetimes. As the art movements of the XX century arose and evolved, one after the other, they hardly ever forgot the power that the Still Life composition has to provide an arena for philosophical discussions about the notions of space and time, and a conceptual laboratory for theoretical models of representation.

De Chirico, whose art movement is termed "Metaphysics", devoted considerable attention to the concept of space, especially through his famous perspectives of solitude in monumental urban spaces. He also adopted the Still Life language to address the question of space representation, with instruments of mathematical measurement balancing on a tabletop that appears tilted at a sliding angle, crowned by a perspective fugue through a triangular window at the back, and paying homage to the history of



FIGURE 32. De Chirico, “Still Life”.

the genre with his Cézanne-like voluminous shapes of fruits occupying and defining the center of the composition. The reference within the reference is hinted at by the presence of a Still Life painting of grapes within the Still Life painting, the representation of a representation, or a second level of conceptualization.

3.7. Cornell's cosmic dioramas. It is finally with the assemblage works of Joseph Cornell that the notion of space defined by the relational positions of Still Life compositions merges with space in the cosmic sense, the outer space of astronomical and cosmological vastness. Confined within and extremely narrowly defined frame, that of a box, the cosmic dioramas of Joseph Cornell explode this reference frame into perspectives of cosmic scale. The confined space of the boxes is transformed into windows opened upon vistas of constellations and galaxies and a vertigo of depth of astronomical distances. Yet, at the same time, the new elements brought in to refer to modern science, through graphics and stellar charts, blend with compositions of glasses and corks and cutup newspapers, all well established elements in the early XX century vocabulary of Still Life compositions.

Thus, by the time of the 1970s, modern art was using the latest incarnation of the Still Life genre to connect to visions of space popularized by astronomy and cosmology. The debate on the structure of space continued to undergo very fervent bursts of activity in mathematics, physics and cosmology, all through the XX and now into the XXI century. Cornell has shown us that visions of space at the cosmic scale are not incompatible with a genre of artistic expression that was born in the Dutch kitchens of the XVII century. We await similar artistic expressions tackling the scientific visions of space at the infinitesimally small scales, where high energy physics dwells, and the varieties of space structures developed and explored by modern mathematics¹.

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FIGURE 33. Joseph Cornell, “Eclipsing Binargy Box”, 1972

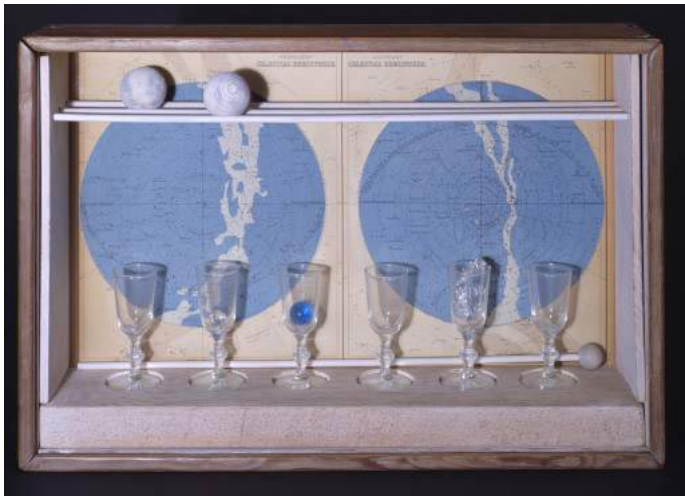


FIGURE 34. Joseph Cornell, “Assemblage”.