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On Scientific Method in the Study of Art

Allan Marquand

C. Oliver O'Donnell (ed.)

EDITOR'S NOTE

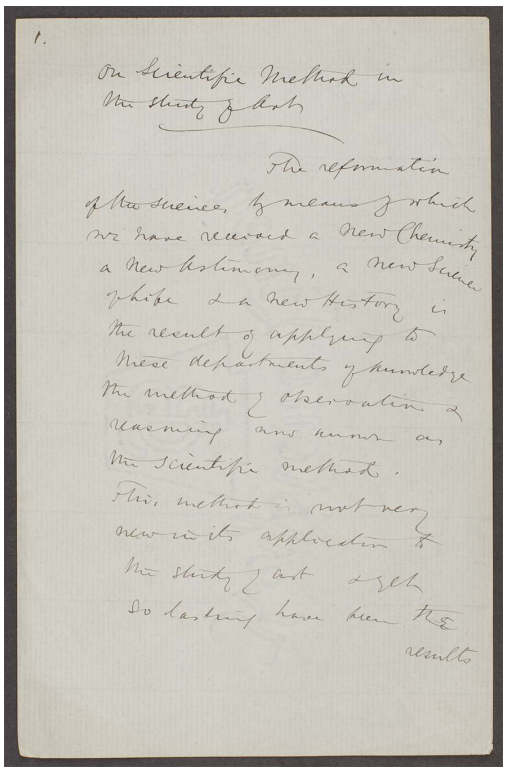
[undated, delivered 1889]
transcribed and edited by C. Oliver O'Donnell.
For the original manuscript, see "On Scientific Method in the Study of Art"; dates not examined; Allan Marquand Papers (C0269), Box 10 Folder 22; Manuscripts Division, Department of Rare Books and Special Collections, Princeton University Library.

1 The original manuscript is handwritten in pen and pencil on fifty-five loose sheets of paper, each measuring approximately 14 x 20 cm. The original pages are numbered in the top left corner; however, there are two pages numbered 30 and no page 23, presumably due to extensive editing on Marquand's part. In addition to Marquand's at times difficult handwriting, there are many corrections in the original manuscript (including extensive crossings-out and even some pasted over sections) which make deciphering some sentences difficult. To facilitate future comparisons and potential corrections, I have marked the end of each page in the original manuscript with corresponding numbers in brackets within the text of this transcription. Sections of text in brackets in this transcription indicate doubt as to Marquand's intent or an addition made by the editor for the sake of clarification. Sections of text in this transcription with strike-through font indicate that Marquand crossed these words out in the original manuscript. I have omitted the vast majority of Marquand's crossings-out; however, those that I judged to be of interest for intellectual history and that could be incorporated with ease, I have included. Underlined sections in this transcription reflect underlining in the original manuscript.

2 The reformation of the sciences by means of which we have received a new chemistry, a new astronomy, a new science of which and a new history is the result of applying to these departments of knowledge the method of observation and reasoning now known as the scientific method. This method is not very new with application to the study of art and yet so lasting have been the results [1] of unscientific attempts that it is worth our while to stop and consider, perhaps to justify the method of our work. [Let us glance first at those unscientific methods to be distinguished from ours.]

3 1. The mystical method. It is a very general belief amongst uneducated people that art is a mystery which they cannot comprehend which nevertheless they can apprehend and admire. How many a man or a woman do we see standing in rapt admiration over a picture or a statue, simply because they apprehend that it was a work of art. Whether it was [2] fine art or despicable art they make no attempt to decide but appeal for such judgment to the guidance of others. To supply the demand for such judgments there spring up pretending critics whose only function it is to pronounce upon works of art. What the foundation of those judgments may be matters little provided they be clear and distinct and the popular want is satisfied. It is enough to say of the mystical method that there is no such mystery in works of art. There is no super or sub natural quality that removes art from human comprehension; and no necessity therefore for an artistic priest-craft, and no hope that by this method we could ever reach judgments of permanent value, or anything like consensus of thinking minds. [3]

Allan Marquand, first page of "On Scientific Method in the Study of Art."


1.

On Scientific Method in the Study of Art

The reformation of the sciences, by means of which we have received a new Chemistry, a new Astronomy, a new Science of life & a new History is the result of applying to these departments of knowledge the method of observation & reasoning now known as the scientific method.

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Delivered in 1889, *Allan Marquand Papers* (C0269), Box 10 Folder 22.

MANUSCRIPTS DIVISION, DEPARTMENT OF RARE BOOKS AND SPECIAL COLLECTIONS, PRINCETON UNIVERSITY LIBRARY.

4 A second method which we claim as unscientific may be best designated as the metaphysical method. Thinkers of this class transfer the distinctions of philosophy to the domain of art. They look upon art as practical philosophy and [as a phenomenon] to be explained by the ideas which philosophy supplies. One of the principle distinctions which they have succeeded in applying to the value of art – and to literature as well – is the distinction between the real and the ideal. [The distinction has no longer a vigorous vital hold upon philosophy itself. It not only involves a confusion of thought, inasmuch as real things are not identical with non-ideal things and idealities are not identical with unrealities, but it no longer expresses an important means of classifying philosophical thinkers.] [4] Whenever [this distinction] has been adopted in art criticism it has only [made] confusion of thought. We shall be better off by rejecting it altogether.

5 Another notion which has a still stronger hold upon our [conceptions] concerning art is that it is concerned with the Beautiful. But metaphysical conceptions of the beautiful fall short of the requirements [of a scientific method] because they import as fundamental [5] notions which are not fundamental to art. Thus with Hegel, the beautiful is the absolute in sensuous existence, the actuality of the Idea in the form of limited manifestation. All I need say [of] the connection is that if the object of our search be the absolute as the Idea, we [may] undoubtedly widen our conceptions by considering works of art in addition to other phenomena. But if our search be limited to works of art, our fundamental notion must be that of art itself. [6] As a matter of fact beauty may be present or absent in works of art. We may search for it there, if we please – but we may search for it as well in the orderly arrangement of the stars, in the constructive characters of chemical combinations, in physics, in botany, in biology, in literature. [Once the conception of beauty has been objectively established, it will be interesting to have its developments in works of art. But in works of art as a whole, beauty is so rarely a leading motive that this inquiry would confine our attention to a comparatively narrow field.]

6 The metaphysical method is a step in advance of the mystical [7] and for two reasons. First, by an analysis of the contents of consciousness it seeks to do away with mysteries and make our ideas clear. Second, by the very attempt to reach rational judgments, it abandons the individualistic position of the mystic and reaches conclusions the grounds of which may be tested by other minds. Metaphysical methods have sometimes anticipated the results of science, as when Swedenborg anticipated the nebular hypothesis of La Place – but far more presently have metaphysicians failed, when they have attempted to go beyond the universe of ideas and deal with material things. [8]

7 A third method in which the subject of art is frequently approached we may call the literary method. I do not now refer to the use which is made of works of art as a means of reconstructing before our imagination the records of past history and literature, but of the infusion into the study of art the spirit of literary work. As I take it the distinguishing [9] characteristic of the student of literature is the attention he has to expression. Thoughts or ideas are merely incidental to the literary student. They are included in the material or presuppositions of his study. He has nothing to do with them until they are expressed and then it is with the expression rather than the thought that his work is concerned. The practical creator of literature finds himself in natural sympathy with other artists because he sees in the architectonic, plastic, graphic and musical arts [10] forms of expression more or less similar to his own. The various arts are to him other languages, some closely others distantly related to his own, but all languages which man speaks to man. We cannot listen to one of Wagner's late operas without being impressed

with the linguistic power of the artist who can express the most varied feelings through the medium of musical forms. Similarly we are impressed with [Michelangelo's] pictures as an eloquent appeal for greater humanity in religion, in the administration of justice and in the intercourse of nations with each other.

8 There are indeed many points of analogy between the art of writing and the other arts and it is certainly helpful when anyone [11] of these, which may have progressed more rapidly than the others, should diffuse the benefits of that progress to its sister arts. Thus architecture may present us with the clearest notions of construction, sculpture with that of form, painting may teach us the secrets of color and light, and music the worth of harmony. Even if the special idea of one art should be discernible in all the rest, the fullest development of that art cannot be secured except upon the condition of freedom. Kant recognized this when he [tells] us that art is free production and [Victor] Cousin when he says "a condition of art which it cannot renounce without being destroyed is that it be free, or in other words that it be the servant of nothing except itself." [12] Sculpture and painting are enslaved to architecture[;] they cannot be more than constructed ornament and decoration. It is only as free and independent arts that their own growth can reach its highest point. A similar misfortune befalls the study of art, if it be pursued merely in the spirit of literary study. We may as a result have beautifully written lines of the artists (as Vasari), or elaborate works upon various schools of art treated still in the metaphysical method (e.g. Lübke), we may have literary treatises whose subject is art (e.g. Ruskin, Taine) and yet feel something wanting. [13] The product is merely a department of literature, interesting to men of literary tastes rather than helpful to the cause of art.

9 The demand which practical artists make upon the thinking of today is that objects rather than ideas or persons, or modes of expression, should be made the foremost subject of study so that the experience of the past may be available for practical guidance in the future. Neither the mystical [14] nor the metaphysical nor the literary thinkers are sufficiently skilled in the observation of things, as distinguished from ideas and words, to take upon [themselves] this task in hand. Nor can [this task] be relegate to practitioners absorbed as they are in the technical methods of special arts. What is needed is evidently that a wider survey of the subject be taken under the guidance of the scientific method, which has been so fruitful in its results in other departments of knowledge. A leading characteristic of the scientific method is the application of experience to the increase of knowledge. And this is precisely what is needed in the present case – a [summarizing] [15] of the laws which are obtainable from a study of objects of art and an application of such laws to near cases. We need not discuss the possibility of the scientific method in dealing with this subject for that method is applicable in all departments of knowledge wherever the class of phenomena are sufficiently clear and distinct to be made the object of observation. It is necessary only to separate from other phenomena those which shall be our special subject of study.

10 In the widest sense art comprehends all things we find in any way put together, formed or made. In this sense art is distinguished [16] from chaos. In the condition of perfect chaos there are no laws. In the condition of art, the universe assumes form and statements may be made concerning it which are either true or false. It is evident then that all sciences in the widest sense deal with objects of art and we must proceed to bring our subject within practical limitations.

11 A second and more limited definition of art, confines it to the things formed or made by man. This distinguishes art from nature, [17] a distinction which we must be careful to regard as a practical limitation rather than as a definition. Art is not ever in this limited sense, opposed to nature, but rather a part of a fulfilment of nature – that part of nature in which man appears distinctly as formative agent. [18] The things made by man form [an] art-universe by themselves, not unrelated to, but a part of the great universe of art not made by man. But this lesser universe is large enough, yet far too large to form a field of study by itself. We must still further limit the subject before we can handle it practically. The total universe of things made by man shows very different characters. It is in the widest sense an artistic process by which man [19] forms mythologies, governments, [and] sciences, yet the results differ greatly from those of architecture, sculpture, and painting, which may have been [inspired] by precisely the same motives. Discussed as products the latter are distinguished from the rest as being visible products. They appeal to us through impressions made upon the eye. This suggests a differentiation of all the sensible from the insensible products of human activity and it is evident that to the former [20] rather than [to] the latter that the science of art is limited. The sensible arts would then be naturally classified according to the sense organ through which they make their appeal to us. [Gastronomies], [perfumes], music and sculpture fall naturally into their own classes. So divergent however are these fields of study from an objective standpoint that the practical student must still further limit his field. [21] Let us then confine our attention to the arts which address themselves to the organ of sight, leaving music and poetry and all the arts which appeal to us through the other senses to form separate fields by themselves.

12 Our definition is not yet complete. The arts do not aim to impress the senses merely, but through sense impressions to arouse the higher forms of consciousness[:] memory, understanding, imagination, [22] emotion, will. In this complete sense we exclude from our field all products of activity that serve a purely material purpose. A house, if it be a mere box for shelter, is not specifically a work of art. It becomes so only when by its proportions, the relations of its voids and solids, its decorative members and other such qualities, an appeal is made to our higher consciousness. A dress may be a mere covering for the body – and mere garments are hardly more than this – [24] or it may be designed to arouse the emotion of others – as women's dresses sometimes are – and thus become a work of art. In this more specific sense art is to be distinguished from manufacture and other similar forms of industry. [25]

13 It is because of this latter purpose that architecture, sculpture, and painting have been selected as convenient classifications of the visible arts. This classification, it will be recognized, is not exhaustive or complete. It is practical rather than logical and is too frequently adopted, because of its convenience, without being investigated or understood. A thorough classification of the visible arts should rather proceed to indicate the kinds of things that affect the organ of sight. These we may distinguish broadly according as they affect us by means of form or color. [26]

Form	I) Lines – graphic arts	1) drawing – pencil, pen, crayon, brush, etc.
		2) engraving – copper, wood, etc.
		3) Etching = 1) + 2)

		4) Weaving – embroiders, lace, textiles
	II) Surfaces – plastic arts	1) marble & stone cutting, wood, ivory
		2) ceramics, bronzes, moulded glass
		3) wrought iron, refuse, hammered
	III) Solids - architecture	architecture
Color	I) Light & shade	1) selection of shades, use of light & shadow
	II) color - chromatics	Playing of color (mosaic (glass, ivory, woods, stone, marble, illumination))(painting(wood, canvas)
[27]		

14 Having selected the class of objects however limited or extensive that class may be – by what method shall we proceed to study them? By all means let us adopt the method by which our knowledge of the subject may be best extended and by which our conclusions may receive the concurrence of all who may properly examine the facts. [28] What we need is not so much [a knowledge of the principles of induction, deduction and hypothesis] to import a system of thought into the subject, as it is to secure from the start the right point of view and a few inspiring ideas to guide us in entering upon our work. [29] The point of view which we have reached as the right [one] is the simple and direct study of the facts, accepting from every other department all the help we need and enslaving ourselves to none with our [energies.] Directed to the complete organization of knowledge within our limited sphere and ever asking to apply this knowledge to unlock the meaning of new facts and reveal the existence of new laws. [30]

15 We have recently been told what that method has done for our knowledge of history and politics and we cannot be blind to the fact that the most fruitful study that is given to the department of art at the present day is inspired by the same scientific spirit. Ever since the close of the last century the [29/30] method of work in this department has become more and more exact and the excavations, investigations and discoveries more and more significant. This method we believe has been a natural growth within the limits of the subject, rather than a method foisted upon us from without. Within a year after Darwin had published his *Origin of Species* there appeared in England a work on the *Development of Christian Architecture in Italy* [by William Sebastian Okely] in which the gradual evolution of one species of architecture out of another was distinctly shown by a [31] series of diagrams. This idea of evolution is one of the inspiring ideas we have referred to as leading to fruitful results. It is already revolutionizing the old ideas of spontaneously generated arts. Even Greek Art, which stands most prominently to the imagination as the shining example of original and creative minds, is more and more being recognized as dependent upon the Orient for almost the entire series of its forms. When therefore any artistic form is presented to the mind and we seek to understand it, we are at once led to [32] inquire into the series of persisting forms which prepared the way for it, assuming that artistic forms develop not *per saltum* but by a gradual series of changes.

16 To establish a series of forms is an important task to which the student of today is called to contribute his share of labor. This is not a mere archaeological task, in the sense that we are satisfied when we have ascertained the relative antiquity of objects, it is a scientific task of establishing a progressive series so that any particular [33] form in the series may be better understood in the light of what has preceded and followed it. We may borrow from the archaeologist all that he may have ascertained with regard to the antiquity of the monuments in which we are interested. This will aid us in establishing our series. The archaeologist on the other hand may frequently have no other means of determining the antiquity of an object than by the position it occupies in such a formal series. He then becomes the borrower from the student of artistic forms. The two cover the same field [34] when the archaeologist limits his attention to artistic objects and the student of art limits his to the archaeological side of his subject.

17 The attempt to establish a series indicating the actual state of progress in any department of art gives rise to a new exercise of the imagination. Only in comparatively recent times can we expect to find actually existing monuments in sufficient number to enable us to trace the development from actually existing [specimens]. Here also and still more in the art of remote periods are we obliged to reconstruct in [our] imagination forms that no longer exist in part. [35] Such reconstructions may be accomplished with far greater security today than they could have been a few generations ago. When a writer like Mr. Fergusson [restores] to [our] imagination an Assyrian palace with a careless mingling of Russian, Greek and Assyrian elements we at once discard his reconstruction as worthless. Even an elementary knowledge of ancient art is sufficient to inform us that such hybrid specimens could never have existed in ancient Assyria. The use of the scientific [36] imagination is in constant demand in the history of art. So many objects come down to us in fragmentary condition – in so many series. There are missing links that we are constantly required to complete by supplying the absent data. The exercise of the scientific imagination is one of the inspiring factors in the new method of work. It is of the nature of prediction and such predictions are being constantly verified. When Dr. Waldstein recognized in an unclassified marble head in the Louvre workmanship, he predicted that it would fit upon one of [37] the headless Lapiths of the Parthenon metopes and so it did. When Brunn recognized in a few statues in Italy characteristics of style that seemed to radiate from the west coast of Asia Minor, he predicted the great discoveries in Pergamon which since have been made. [38]

18 A still wider prospect and still stronger inspiration is in store when the comparative methods of research are adopted. The tracing of the line of a single art form implies a constant comparison. Without such comparisons we could not establish our series – but we shall find the same original form under different conditions following different lines of development [39] or the various arts in any one country progressing at differing rates. Thus Byzantine art in extending to southern countries is developed in the direction of the graphic arts. Under Mohammedian influence it [undergoes] an architectural decline while its ornamental and decorative features are developed to an extraordinary degree. Travelling northward its graphic elements remain unchanged for centuries, but architecturally it develops with the bizarre forms of complicated [domical] structures of the Russian churches. [40] Such differences as these are interesting from the comparative standpoint and offer a new series of problems for [solution]. The agreements also are no less striking. In Greek architecture and sculpture we find low, sturdy forms succeeded by higher, slenderer ones – the same order of development that we find in the transition

from Romanesque to Gothic. Is this to be explained by the similarities of human nature? Then what are the traits in human nature which [41] lead men under the most varied circumstances to follow the same order of growth? Or is it to be explained by a similarity of social conditions? Then what are the conditions that thus effect the artistic development of a people? Thus the comparative method leads us at once into contact with psychological and sociological problems. [I have often thought it strange that political [economists] of note should expend so much labor upon the commodities which we have classed as objects of industrial art and that they affect to despise the objects of fine arts as useless luxuries – as if an object which supplied a bodily want were more useful than that which stimulates and nurtures and calms the mind. For the purposes of scientific study as well as for the purposes of the things themselves, our sympathies are [with] the man who said "give me then the luxuries and let the necessities take care of themselves."] [42]

19 We have thus far treated our subject as a mere study of forms and principles concerning [43] forms. We have also to consider the element of color as another mode by which objects impress us through the eye. This is a more difficult subject than the study of forms, especially as color is usually considered in works of art as a mere concomitant of form. But it is evident that the various modes of influencing the mind by means of the colors must fall within the sphere of our study. All the possibilities of color combinations whether by the mixing of pigments or of [44] lights or the purely subjective combinations should be known to the student of art both as matters of experimental research & as objects of historic [interpretation]. It is easy, for example, if we should proceed in a purely empirical way to accept only a few pairs of colors as complementary to each other. Whereas if by being complementary we mean that color which being combined with the other will give white light, it is easy to see that the number of such pairs is infinite. For if x stand for white [45] light & a for any color, it is evident that x – a will be the complementary of a, whatever a may be. And from the coefficient of the binomial theorem we may determine exactly how many pairs of complementary colors there will be, under any given analogies of white light.

20 Let ...

x	=	white light
a	=	a color or combination of color
b	=	x – a , the complementary of a
n	=	the number of colors into which white light is analyzed

$$(a+b)^n = a^n + na^{n-1}b + \frac{n(n-1)}{2}a^{n-2}b^2 + \frac{n(n-1)(m-2)}{2,3}a^{n-3}b^3 + \cdots \frac{n(n-1)(n-2)\ldots(n-m+1)}{2,3,4\ldots n-m}a^{n-m}b^m$$

21 So much for the number of complementary colors – but there will be many other numerical [46] and non-numerical relations of colors which must be introduced into a comprehensive study of the subject. The chemist, the physicist, the psychologist, the

student of classical literature, and lastly the physicians may all interest themselves in the subject of color. Still there remains the point of view [of] the student of art to determine the conditions and laws under which the universe of color may be made to satisfy the psychical want of man. We have only in our imagination or in fact [to] eliminate the element of color and what a different universe would this be. We have [47] again only to adjust polarizing apparitions and we have revealed to [ourselves] a whole universe of colors that under normal conditions we never see. There may be still other universes of color within our grasp of which we have never dreamed. The utilization of all the possibilities of color for psychical purpose belong to the artists. [48]

22 Thus far we have spoken of forms and colors as things in themselves and outlined a method of the study which is akin to the biological method on the one side [and the] mathematical-physical on the other. The analogy of the scientific study of art and the present study of biology is a striking one. In the study of constructions, implements, and drawings of prehistoric, primitive or underdeveloped man, we have [49] a department corresponding to paleontology. In this study of historic art we have the morphology of the subject. In the comparative view of different arts, or the arts of different peoples, we have a department corresponding to comparative morphology. And finally in the interpretation of artistic forms we have the physiology of art. In the study of color the analogies to the biological treatment are not so striking. [50] The physiology or interpretation of art comes last for the forms must be studied as forms before their meaning can be properly understood. In this part of our subject we view works of art as serving a purpose. [51] That purpose we recognize in our definition as a psychological one as the end and aim of a work of art is through sense impression to excite some kind of psychic feeling. This affords us a new basis of classification. Some works of art address mainly the senses, the gratification of the eye by combinations of form and color. Others address the imagination and lift us above the commonplace into a new ideal universe. And again others appeal to the memory [52] and recall scenes or faces which we do not wish to lose. But we cannot rest content with a psychological classification alone. What we wish to know is not the mental [53] faculty of the nervous centres involved in the contemplation of artistic things. This falls to the lot of the psychologist. What we wish to know in interpreting a work of art is not only (1) its purpose but also (2) how that purpose has been accomplished (process) [and] (3) whether it has been accomplished in the best possible way (degree of success). All of these three questions are to be determined from a study of the objects themselves and from other similar objects rather than from the feelings they excite within us. Hence in the interpretation of works of art[,] [54] if we would eliminate as far as possible the personal equation and reach conclusions of general and enduring value, we must proceed methodologically – and in our judgment, the best method to secure that result is the scientific method.[55]