CREATIVITY AND THE PHILOSOPHY OF C.S. PEIRCE

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Creativity and the Philosophy of C.S. Peirce

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Chapter 1
INTRODUCTION

Charles Sanders Peirce is quickly becoming the dominant figure in the history of American philosophy. The breadth and depth of his work has begun to obscure even the brightest of his contemporaries. Concerning the interpretation of his work, however, there are two distinct schools. The first holds that Peirce's work is an aggregate of important but disconnected insights. The second school argues that his work is a systematic philosophy with many pieces of the overall picture still obscure or missing. It is this second view which seems to me the most reasonable, in part because it has been convincingly defended by other scholars, but most importantly because Peirce himself described his philosophy as systematic:

> What I would recommend is that every person who wishes to form an opinion concerning fundamental problems should first of all make a complete survey of human knowledge, should take note of all the valuable ideas in each branch of science, should observe in just what respect each has been successful and where it has failed, in order that, in the light of the thorough acquaintance so attained of the available materials for a philosophical theory and of the nature and strength of each, he may proceed to the study of what the problem of philosophy consists in, and of the proper way of solving it (6.9) [1].

In adopting the systematic approach to Peirce's work, however, one should not confuse systematization with

completeness. Peirce himself knew only too well his peculiar knack for leaving projects unfinished, for being suggestive but not always thorough. Moreover, the variety of Peirce's work is great; his importance ranges from contributions in mathematics and logic to work in astronomical observation. This provides interpreters with the challenge of both unifying the variety and developing the suggestiveness of Peircean insights. In addressing this challenge a variety of interpreters might thus eventually move toward a more complete view of Peirce's system or architectonic; indeed, recent literature seems to indicate that such a synthetic, accumulative process is already occurring. Therefore, it is in the interest of contributing to this process that I undertake the present project.

The central task of this book, then, is to examine Peirce's philosophy with respect to his ideas about creativity, in general in the evolution of scientific thought, and specifically in art. In the American tradition, Peirce has been known primarily for his work in logic, semiotic, and the philosophy of science. However, within the past fifteen years or so, there has been an increasing admiration for other aspects of his philosophy. One of these is his more specific critical speculation which led him to propose hypotheses about the operative principles of evolution, which he viewed as teleologically directed, though within a system that could not be understood deterministically. His conception of evolution as creative was also closely tied to his ideas about esthetics, and specifically, the way creativity occurred in arts as well as the sciences. Unfortunately, Peirce's comments about art are scarce and are widely scattered throughout his writings. Thus my task will in part be like that of a detective who must construct a thesis on the basis of as many clues as he can find [2]. To the extent that I succeed, I shall propose an overall view of creativity in art consistent with the architectonic which Peirce himself claimed to have been seeking.

My central theme is that there is an implicit theory of artistic creativity in Peirce's system which needs to be brought forward. What follows is an overview of how I shall develop this theme. I shall begin by examining Peirce's explicit theory of scientific

creativity as an access to his implicit theory of artistic creativity. When the limits of this comparison are reached, Peirce's conception of creative evolution will be employed to develop a fuller picture of creativity in art. The conclusion will draw upon these two comparisons or analogies to describe briefly a comprehensive account of Peircean creativity and will attempt to locate this account both within Peirce's own architectonic and within the American philosophical tradition.

Peirce demonstrated a constant fascination with the arts while he avowed his own incompetence in dealing with them either as an artist or an observer. Still, it is not entirely clear why Peirce did not do more specific work in esthetics as a branch of philosophy, since he acknowledged that his philosophical career began with a reading of Schiller's *Aesthetische Briefe*. Our only explanations are Peirce's own comments on his abilities and interests, such as the following: "As for esthetics, although the first year of my study of philosophy was devoted to this branch exclusively, yet I have since then so completely neglected it that I do not feel entitled to have any confident opinions about it" (5.129). From this and other instances Max O. Hocutt argues that "the best single explanation" for Peirce's neglect of esthetics "is that Peirce was wedded to logic and knew her to be a satisfying spouse" [3].

As far as Peirce's earlier work is concerned, this seems a reasonable answer. However, in the mid-1890's Peirce made somewhat of an esthetic shift in his philosophical focus; that is, while he still maintained that logic was the foundation of all reasoning, he recognized that logic was in turn dependent on esthetics. Peirce described the history of his thought as follows:

> In those days [1850's], I read various works on esthetics; but on the whole, I must confess that, like most logicians, I have pondered that subject far too little. The books do seem so feeble. That affords one excuse. And then esthetics and logic seem, at first blush, to belong to different universes. It is only very recently that I have become persuaded that that seeming is illusory, and that, on the contrary, logic needs the help

> of esthetics. The matter is not yet clear to me; so unless some great light should fall upon me before I reach that chapter, it will be a short one filled with doubts and queries mainly (2.198).

The problem, then, seems to be that Peirce did not know how to develop his own esthetics, for the chapter mentioned was never written. Thus, what we have in Peirce's work is a neglected area which is crucial to his system.

In recent years there have been at least four important attempts to make an inroad into Peirce's esthetics: those of Max O. Hocutt, E.F. Kaelin, Beverley Kent, and C.M. Smith [4]. Each of these thinkers develops some insight in the the relation of Peirce's esthetics to his semiotic, categoriology, and development of the normative sciences as a whole. And yet much more needs to be done. As suggested above, what I want to do is to fill out another corner of Peirce's esthetics with the hope that the combined effort will allow his esthetics to grow as it might have had Peirce himself spent more time in this area. The corner I have chosen to develop is that of artistic creativity.

When Peirce made his esthetic turn in the mid-nineties, a void was generated in his architectonic, for while he acknowledged the importance of esthetics as a philosophical science, he left open the question as to how artists think and thus how artists contribute to the evolution of thought. In itself this void would be of little consequence; but within the context of Peirce's thought it is crucial. In Peirce's scientific and metaphysical work, the method of the thinker plays an important part. Indeed, how scientific thought grows through discovery by the process of abduction (creative hypothesis formation) is the central theme of Peirce's logical work, that is, his philosophy of mind. Further, Peirce considered logic to be on par with ontology or metaphysical science itself. Therefore, the introduction of esthetics into Peirce's philosophy seems to call for some account of artistic abduction; for Peirce's system to maintain its symmetry or continuity, some account of artistic thinking--that is, some description of artistic creativity--is needed.

To provide this account, I shall begin, in accord with Peirce's own dominant interest in scientific thought, with a description and analysis of his view of scientific discovery. According to Peirce, a scientist is creative in using analogical reasoning to construct reasonable hypotheses concerning the state of the universe. Thus the creative scientist goes beyond the traditional processes of deduction and induction. However, Peirce argued, while a scientist may be creative in this sense, he does not do what an artist does; the two activities are distinct. Artists--those who create art--are "those for whom the chief thing is the qualities of feeling" (1.43). And scientists are "men to whom nothing seems great but reason" (1.43). Therefore, in developing this initial description of discovery, I shall emphasize both the similarities and the crucial differences between scientific and artistic creativity which Peirce suggested. I shall argue that this distinction is best seen as the difference between analogical and metaphorical reasoning. Thus, by way of illustration, a short detour into Peirce's semiotic will be made, for it is here that he made some suggestions about the implicit distinction between these two modes of thought.

Peirce's theory of scientific creativity, as an analogue, provides an access to his view of artistic creativity, but in itself does not provide a full account. To develop a positive description, we must turn to Peirce's basic model for all forms of creativity: the process of creative evolution, the dynamic source of which is God. Through several key concepts Peirce described how the universe evolves toward regularity at the same time as it is filled with diversity. When these concepts are applied analogically to artistic creativity, they provide an explanation of Peirce's descriptions of how artists work.

The first idea, "developmental teleology", which Peirce applied to personality growth, though not specifically to artistic creativity, demonstrates how a telos develops during a creative process. In developmental teleology the telos, instead of being a fully preconceived end, is in part indeterminate at the outset and is developed in the process itself. If applied to artistic creativity, this means that as an artist creates, his telos gets refined. It grows and

becomes more and more distinct. Thus, in the same way that for Peirce the universe itself moves from the vague to the definite, an artist's telos crystallizes in its unique particularity. Such an extension of developmental teleology squares with Peirce's claim that artists, in being primarily concerned with the category of firstness, seek to articulate what is indefinite. If this interpretation is correct, Peirce may be seen as providing a foundation for the contemporary claim that an artist does not know fully what he is going to create until he creates it [5].

One upshot of this claim, however, is that under it an artist does not have full rational control of his activity. Therefore, it is not even clear that it is *his* activity. A way of understanding this issue is suggested by Peirce's theory of agapasm or agapistic evolution--"evolution by creative love" (6.302). This theory provides a possible alternative source of artistic control in an artist's agapastic love for his project. Therefore, although there may be a rational discontinuity in the creative process, an artist's love bridges it, thus providing the required integrity of creativity. An artist controls a developing telos by letting it grow under his care. As Peirce put it: "It is not by the dealing out of cold justice to the circle of my ideas that I can make them grow, but by cherishing and tending them as I would the flowers of my garden" (6.289).

In filling out a positive account of creativity, I shall also rely on Peirce's notion of spontaneity. For Peirce, spontaneity was the essence of mental activity; it provided the discontinuity between the past and the future in which something new was able to arise. Consequently, in order to locate spontaneity a brief investigation of Peirce's conception of time must be made. The past is determined and the future is open; and the present mediates the two. Therefore, spontaneity, as the bringing of the new out of the old, must occur in the present. An artist, in creating the new out of the old, submerges himself in the qualitative immediacy of the experience itself. For this reason Peirce maintained that the "poetic mood approaches the state in which the present appears as it is present" (5.44).

In synthesizing these key concepts with those extracted from the earlier discussion of scientific creativity, I shall develop a full hypothesis concerning Peirce's understanding of artistic creativity. The conclusion will try simply to give an overview of this hypothesis by drawing together the important features of the two analogies: scientific creativity and artistic creativity,and creative evolution and artistic creativity. Several upshots of future interest will be discussed as well, though full examination of them must be reserved for another time. These are: that this view of Peircean artistic creativity 1) enables Peirce's system to account for the contribution art makes to the growth of thought and knowledge--a contribution fully recognized by Peirce, 2) provides a way of relating Peirce's work to other theories of creativity and esthetics in the American tradition, and 3) suggests a move toward a balance between the scientific and the esthetic in American metaphysics--a balance toward which Peirce moved, but which he never fully articulated.

This, then, is an overview of the project. As I develop the various arguments involved, I shall rely heavily on certain Peircean ideas as guidelines to or foundations for the project. Therefore, I shall try to make these clear at the outset. First, the development of my argument parallels, at least generally, Peirce's theory of inquiry. Thus, I begin with an abductive guess at what Peircean creativity looks like. This abduction takes place *in medias res* inasmuch as I have tried to immerse myself in the Peircean corpus. The abduction is followed by the development and clarification of the hypothesis which is analogous to Peirce's deductive stage of inquiry. And finally, I trace out some consequences of my argument to see if they square with the fundamentals of Peirce's system. This last stage, so far as it is a way of testing my hypothesis, is equivalent to Peirce's inductive stage of inquiry.

The second Peircean notion of methodological importance is continuity. Especially in his later years when his system was more fully developed, Peirce made his theory of synechism or continuity permeate the whole of his philosophy. Many Peirce scholars maintain that synechism is the key to Peirce's philosophy [6].I shall

be less concerned with the theory itself than with some specific applications of it. The most fundamental, and general, continuum with which I shall be concerned is the continuum of the evolution of reality itself. For Peirce, this continuum included not only the world as existent, but also "the whole Platonic world, which in itself is equally real . . ." (6.200). Other continua which are of importance lie within the more specific regions of reality. For example, the continuum of time itself plays a foundational role, as does Peirce's belief in the continuity of ideas in reasoning. And in semiotic we must deal with the various continua of sign-modes, such as the continuum of signification constituted by icons, indices, and symbols. These are only a few of the more important examples which Peirce explicitly provided. In addition to using Peirce's established continua, I hope to show that several continua which Peirce did not specifically address can be fitted reasonably into his system. Thus, in both the outset and the outcome of my project the idea of continuity plays a crucial role as a guideline.

In connection with my emphasis on continuity, I need mention the importance of Peircean mathematics from which Peirce's notion of metaphysical continuity was derived. Since mathematics, for Peirce, played a foundational role for phenomenology, the normative sciences, and metaphysics, it was the most necessary science in Peirce's organization of the sciences. In being absolutely general in its "study of what is true of hypothetical states of things," mathematics is the science without which we can do no other science (4.233). As Carolyn Eisele points out, "in every classification of the sciences, mathematics heads every list, while philosophy to be exact 'must rest on mathematical principles' " [7].

Apart from grounding Peirce's notion of continuity, mathematics is directly involved with the problem of artistic creativity in at least two ways. First, the mathematical ability to construct and follow hypotheses was crucial to Peircean phenomenology in which abduction leads to hypotheses about the categorial structure of reality. Derivatively, the tracing of the necessary consequences of hypotheses was an art requisite in its own way for each of the normative sciences. Thus Peircean

mathematics provided the basis for all use of and discussion about hypotheses. Secondly, the emphasis that Peirce placed on iconic thinking in the arts suggested their relation with mathematical reasoning which Peirce held to be purely iconic or diagrammatic. One of Peirce's classic descriptions of icons acknowledged this relation by its reference both to "the design an artist draws" and "the reasoning of mathematics" (2.281).

For all of these reasons the foundational role of mathematics must not be neglected. However, for two reasons, I shall not pursue a detailed investigation of this role in its relation to artistic creativity: 1) my knowledge of mathematics is less than that required to do full justice to Peirce's mathematical work, and 2) a thorough investigation would constitute a project in itself. In the absence of such an examination,then, I ask that the reader recognize the general importance of mathematics and keep it in mind as we proceed.

The final notion which needs an introduction is the obvious one of Peirce's categoriology. For any study of Peirce's thought it is imperative that his categories be fully understood. According to Peirce all philosophy must begin with observation--it must begin in phenomenology or phaneroscopy. And phenomenology for Peirce was precisely "the Doctrine of the Categories, whose business it is to unravel the tangled skein of all that in any sense appears and wind it into distinct forms . . ." (1.280). The Peircean categories derived from phenomenology turn out to be three in number: firstness, secondness, and thirdness. There can be no fourth--at least there has been no fourth--since all fourths appear to be reducible in some way to the three basic categories [8]. Once Peirce completed his phenomenology and established his categories, he proceeded to see everything, either explicitly or implicitly, in terms of them in either their genuine or degenerate forms. It is important, then, in establishing a Peircean view of creativity that the arguments take account of Peirce's categorial divisions and that any new ideas be presented in the light of Peirce's categories.

Each of these topics--scientific method, synechism, mathematics, and categoriology--will play an important role in

ordering and providing a background for my arguments concerning Peirce's theory of creativity. Therefore, where explanatory detours are necessary to the clarity of an argument, such detours into these topics will be made.

It will be obvious at a glance, however, that I have omitted perhaps the most important guideline for Peircean thought from my list: pragmaticism. My reason for omitting pragmaticism is simply that it has been so much toyed with and "reinterpreted" by both Peirce and the American pragmatic tradition that to find a stable identity for it is extremely difficult. To use it as an explicit guideline thus might be more confusing than enlightening. On the other hand, it is clear that one cannot avoid implicit use of the general notions of pragmaticism in developing any Peircean argument. In my case, for example, in using synechism I incorporate pragmaticism inasmuch as it is one procedure involved in Peirce's understanding of metaphysical synechism (5.4). Therefore, I shall employ the spirit of pragmaticism without entering any detailed discussion of it; in this much, it will remain a hidden guideline for my arguments.

Before moving ahead, I want to acknowledge two important and related dangers in undertaking this project. The first of these is the problem of hubris involved in putting words into Peirce's mouth. I must be careful to remain within a Peircean framework. Needless to say, in addressing the creativity problem I am dealing with only one side of Peirce's thought and it will appear that I am neglecting the rest of his work in logic, semiotic, and mathematics. The point is that I must keep the larger view of Peirce's work in mind as I develop my case; and I must address the evidence itself, not its relative. As long as these considerations are followed, the task is, I think, a reasonable one.

With respect to this concern for evidence, it should be noted that it fits with Peirce's own idea about how his work might be followed. In describing his metaphysics of evolution he offered the following invitation:

> That idea has been worked out by me with elaboration.

> It accounts for the main features of the universe as we know it--the characters of time, space, matter, force, gravitation, electricity, etc. It predicts many more things which new observations can alone bring to the test. May some future student go over this ground again, and have the leisure to give his results to the world (6.34).

Peirce's rich beginnings beckon for interpretation; and with interpretation comes risk.

A related danger in seeking Peirce's theory of creativity is the possibility that I shall use Peirce to defend my own view. If we admit that philosophy is living, this is a danger we must accept. One of the reasons I am undertaking the project is that I do think Peirce is a source of a view to which I subscribe. In this much, I use Peirce to defend my belief. However, I do not intend to twist Peirce's utterances further than they will reasonably go. In laying a false foundation for my own view, I would certainly defeat my purpose. In doing philosophy and the history of philosophy one must acknowledge such dangers and keep them in mind as one proceeds. But one must proceed.

Chapter 2
SCIENTIFIC CREATIVITY

> Logic will not undertake to inform you what kind of experiments you ought to make in order to best determine the acceleration of gravity, or the value of the Ohm; but it will tell you how to proceed to form a plan of experimentation (7.59).

General Background

Since I intend to argue analogically, through difference and similarity, from Peirce's idea of scientific creativity to his idea of artistic creativity, it is important that I begin with a thorough description of Peircean scientific creativity. That Peirce believed in scientific creativity seems indisputable; indeed, at times it seemed the idea that most held his attention in studying the ways of scientific inquiry. In 1896 Peirce wrote the following note:

> When a man desires ardently to know the truth, his first effort will be to imagine what that truth can be. He cannot prosecute his pursuit long without finding that imagination unbridled is sure to carry him off the track. Yet nevertheless, it remains true that there is, after all, nothing but imagination that can ever supply him an inkling of the truth. He can stare stupidly at phenomena; but in the absence of imagination they will not connect themselves together in any rational way. Just as for Peter Bell a cowslip was nothing but a cowslip, so for thousands of men a falling apple was nothing but a falling apple; and to compare it to the moon would by them be deemed 'fanciful' (1.46).

To begin, then, let me describe Peirce's explicit, if not always straightforward, account of scientific creativity by examining his theory of scientific inquiry in general. My main concern is to emphasize and make clear the points Peirce himself emphasized. Having laid out his description, I shall then proceed to look at artistic creativity in its light.

Peirce divided scientific inquiry into three types of reasoning: abduction (also called retroduction, hypothesis, and presumption), deduction, and induction. In his early work Peirce struggled with a fourth type, analogy. Later he simply argued that analogy was a combination of the three primary types. Thus, it is fair to say that he made the whole of scientific inquiry depend on analogical reasoning. This suggestion foreshadowed one of the important upshots of creative scientific inquiry: that is, that its conclusions, as plausible hypotheses, are presented as analogues of reality. But of this I shall say more later. Of the three types of reasoning, only two, according to Peirce, were synthetic or ampliative: abduction and induction. Scientific creativity that is synthetic, then, must begin in one or the other. Peirce finally worked out his view in his later work. However, in his earlier writing he hinted at his final position; he decided that of the two, that which leads us to new discoveries and new ideas is abduction. This is because induction "classifies" and abduction "explains" (2.632). Thus, induction must develop what is already known, whereas abduction is free to introduce new ideas. Therefore, to find originality in scientific inquiry, we must look closely into abduction, for an abductive guess is "a bolder and more perilous step" than an inductive inference (2.632).

Because abduction is the source of scientific creativity, I shall spend most of my effort in examining Peirce's understanding of it. However, it will become clear in the discussion of abduction itself that although scientific creativity begins in abduction, it does not end there. For Peirce, originality in science takes place in a process, through growth. This means that a creative abduction must pass through the other types of reasoning, which thus become

stages of reasoning, before it can be adopted as a truly scientific idea. Therefore, we must also briefly look into deduction and induction to see the general role each plays in the creative process.

Abduction

Peircean abduction, William Davis says, "is the creative act of making up explanatory hypotheses"[1]. It is the type of reasoning in which scientific creativity is manifest. Peirce's use of abduction, as he was the first to argue, was not entirely original. To be sure, however, he was the first to employ it in the "scientific" era and his specific account of it was somewhat original. Peirce's idea of abduction evolved and, while it retained some general features, its specific application within Peirce's system varied. To get a good grasp of scientific creativity through the idea of abduction, then, we should trace this evolution to Peirce's final position, the one with which we are primarily concerned. Initially, we must look at Aristotle's idea of *apagogue* which Peirce held to be the source of his own view.

In 1901 in a paper entitled "The Logic of Drawing History from Ancient Documents," Peirce argued for a new interpretation of *Prior Analytics*, II, 25. He felt that Aristotle would rightly have followed his presentation of induction at II, 23, with a parallel argument:

> [In] having remarked that induction, *epagogue*, is the inference of a syllogism in Barbara or Celarent from its other two propositions as data, [he] would have asked himself whether the minor premiss of such a syllogism is not sometimes inferred from its other two propositions as data. Certainly, he would not be Aristotle, to have overlooked that question; and it would no sooner be asked than he would perceive that such inferences are

> very common. Accordingly, when he opens the next chapter with the word *apagogue* a word evidently chosen to form a pendant to *epagogue*, we feel sure that this is what he is coming to (7.249).

Peirce translated *apagogue* as "abduction"[2]. Thus, we have the historical source of Peirce's notion of abduction: he saw it as the acceptance or creation of a minor premiss as a hypothetical solution to a syllogism whose major premiss is known and whose conclusion we "find to be a fact" (7.249). Two points here are clearly Aristotelian. First, the argument is not necessary but either probable or possible. The minor premiss cannot be immediately known, "for such a statement is knowledge"[3]. In abduction the acceptance of the minor premiss and of the entire syllogism is provisional. This leads to our second point which is that abduction is in a sense outside of purely syllogistic or deductive reasoning. Aristotle was not presenting simply another form of necessary reasoning, but was describing a type of lived reasoning which is on par with and not ancillary to deduction. As Ross puts it, "This type of argument might be said to be semi-demonstrative, semi-dialectical, inasmuch as it has a major premiss which is known, and a minor premiss which for the moment is only admitted"[4]. This point was crucial for Peirce's later description of abduction, for it was the source of Peirce's claim that while abduction is a method, it also has a logical form. Again, Ross is instructive: "It [*apagogue*] is in form a perfect syllogism, but inasmuch as an essential feature of it is that the minor premiss is not yet known, it belongs properly not to the main theory of syllogism"[5].

If Peirce accepted these points, what, then, was the twist he gave to the traditional understanding of *apagogue*? The usual interpretation, he said, "is that abduction is nothing but an ordinary syllogism of the first figure, when we are not sure of the minor premiss, but still are more inclined to admit it than we should be to admit the conclusion if the latter were not a necessary consequence of the former" (7.251). The crucial difference between this view and Peirce's own is that the conclusion of an abduction,

on Peirce's view, is known as a fact. Thus, the form of the argument leads from a known major premiss and factual conclusion to a probable or possible minor premiss. In this way, abduction is the establishing of a hypothesis. Now, this fits with Aristotle's first example of abduction at II, 25, but does not square with his second example [6]. Therefore, Peirce suggested that the text may have been corrupted at this point and defended this suggestion by claiming that his interpretation better fit with the overall scheme of Aristotle's logical work. However, in 1905, in a letter to the Italian pragmatist Calderoni, Peirce retracted his argument and claimed that his position concerning the text was highly doubtful at best (8.209). Yet it is not the specifics of his scholarship here which are important, but rather the perspective we obtain on the origin of his idea of abduction. Out of his interpretation of Aristotle Peirce arrived at an initial view of abduction which held it to be a type of reasoning or method whose form was that of obtaining a minor premiss from a major premiss and a conclusion. This was his first account of hypothesis. Later, beginning around 1901 or 1902, he moved to a more comprehensive view which described abduction procedurally, so that abduction came to "consist in examining a mass of facts and in allowing these facts to suggest a theory" (8.209). Thus, in both following and diverging from Aristotle, Peirce laid the foundations for a type of argument which has a logical form but which is also a lived process of thought.

Following this beginning in Aristotle, we can begin to develop a better picture of Peircean abduction. Before developing the evolution of Peirce's thought, however, I want to make one general point concerning abduction which pertains specifically to our discussion of scientific creativity: that is, that there are different degrees of abduction. Abduction applies to the entire realm of thought. In his later writings, Peirce argued that abductive reasoning was the foundation of all truly synthetic forms of reasoning, including induction. His point was that all interpretive acts are essentially abductive. If we stretch this far enough, we see that abduction must devolve into perception itself. And this is

precisely what Peirce maintained: "Abductive inference shades into perceptual judgment without any sharp line of demarcation between them" (5.181). The upshots of this point for our thesis are several. First, as I shall discuss below, it means that there are abductions with which scientific creativity is not involved. Abduction is a necessary, but not a sufficient, condition of scientific creativity. Secondly, we must be careful in understanding Peirce at this point. He did not intend to conflate fully perception and abduction; rather, he wanted to point out that they are continuous as types of lived processes. The obvious problem for our concerns is that reducing abduction to perception leads to a view of scientific creativity which hinges on "sense perception" empiricism. This was not Peirce's view. Moreover, if we were to extend this view as an analogue to artistic creativity, we would arrive at an equally misleading understanding of Peircean artistic creativity.

If abduction and perception are continuous as Peirce argued, then abduction itself should admit of degrees as it "shades into" perception. This allows the possibility that not all abductions are originative. Now, this point seems clear, since on Peirce's view one can have an abduction which has already occurred for someone else. As Davis puts it, "although abduction is thought of as a creative leap of the mind, this does not by any means imply that the leap has never been made before by anyone or that it is original in the history of human thought . . ." [7]. Just as some persons can perceive the same perceptions, they can "abduce" the same abductions. Therefore, we are not interested in all abductions. All of them are creative in the trivial sense of being synthetic; but not all are creative in the sense of being valuably originative--not all abductions are at the cutting edge of the growth of science itself.

Although Peirce was interested in the entire range of abductions, because each plays some role in the growth of signs, he was most interested in those abductions which allowed science to grow. He was interested in abduction as "the only kind of reasoning which supplies new ideas . . ." (2.777). It is this aspect of abduction which is of particular concern to a discussion of scientific creativity. We want to know generally what it is that persons such

as Copernicus, Kepler, Newton, and Einstein do when they are scientifically creative.

Let us view this problem through some examples. Abductions can have various degrees of creativity. We will later discuss more formally Peirce's specific criteria for analysing creativity. For now, I want to present a rough idea of his distinctions, so that we can proceed in our analysis of scientific creativity with a somewhat more specific idea of the kinds of reasonings we are concerned with. Thus, suppose one sees a U.F.O. flying over a cornfield. He takes account of the vehicle's shape, speed, motion, etc. Taking all the facts together from his point of view, he hypothesizes that the object is really a crashing helicopter. There is a form of abduction here which Peirce calls induction of characters. Now, this form of abduction is creative in the sense that it is both synthetic and clever, but it does not create a new idea. Suppose, on the other hand, that the U.F.O. fits no known class and the farmer hypothesizes some new class which will make sense of it. This second abduction, in creating a new idea, is, by degree at least, more creative than the first. Obviously this example, in being contrived, limits the role of the creator since his ability to create depends on the situation I describe. In science in general we may suppose that problems always exist which are in need of fully creative explanations. Nevertheless, the example points out an important consideration for Peirce's theory: the actual creation and presentation of a new idea. This was one reason Peirce revered such scientific advances as Kepler's introduction of elliptical orbits, Newton's description of gravity, and the various forms of evolutionary theory. Each of these essentially twists the standard view of reality in a radical way. I suspect this was also the source of Peirce's admiration for Kant and Aristotle each of whom upset the apple cart only to reorganize and explain the apples in a much more sophisticated way. While the distinction may not be a standard one in the philosophy of science, it was clearly important to Peirce and is therefore important for our specific description of scientific creativity.

Finally, while I argued above, with Davis, that abductions

which have been previously performed are less creative (some not at all) than wholly original ones, I must admit some exceptions. That is, in such cases there are degrees of creativity. Those abductions which are repetitive are more creative, on Peirce's view, when they take place in similar circumstances in the history of science. Peirce admits this point by acknowledging the originality of an abduction when two or more persons arrive at it at nearly the same time. The discovery of the calculus, the creation of the economic theories of rent and marginal utility, of the several versions of evolutionary theory, and the discovery of non-Euclidean geometries all fit into this category. On the other hand, if someone were next week to discover gravity, his act would be less creative because of the advantage of his historical position. Such an enumeration of cases is difficult to make and dangerous insofar as it leaves one open to questions begging comparison of historical abductions. However, the point is merely to show that there are indeed degrees of creativity in scientific abduction. Peirce himself made the point most clearly by giving as examples of abduction both the complexity and originality of Kepler's work and the common hypothesis that a real man named Napoleon did indeed exist at the turn of the 19th century (2.714). The upshot of this discussion of the degrees of creativity is simply that in analysing scientific creativity we will be more concerned with those abductions at the more creative end of the scale; these shall be our models for scientific creativity and abduction.

Having narrowed the scope of our investigation somewhat, let us look more closely at what Peirce meant by abduction. K.T. Fann argues, correctly I think, that Peirce's theory of abduction changed rather drastically in its growth [8]. While it is often misleading to dissect philosophies into developmental stages, this case seems warranted. The most important evidence is Peirce's own statement that "in almost everything I printed before the beginning of this century I more or less mixed up Hypothesis and Induction . . ." (8.227).

Both Fann and Arthur Burks provide an important insight into this transition. They argue that Peirce began by viewing

abduction as an "evidencing process" and later switched to treating it as the stage of scientific inquiry which leads us to hypotheses [9]. As an evidencing process abduction was, just as induction, a way of deciding for or against given hypotheses--it was one logical form of deciding probability. However, even at this early stage Peirce acknowledged the other aspect of abduction: its function as a source of new hypotheses. Therefore, the shift is not simply from evidencing process to source of new ideas, but a shift from a conflation of these two ideas to a distinction between them and a particular emphasis on the latter. I say "emphasis," for there is a sense in which Peirce's later (post 1900) view of abduction retained an "evidencing" nature. However, as we shall see, because it occurs at the beginning of inquiry, it is evidencing of a less important nature than that found in induction.

In the 1878 version of abduction we can see the relation to Aristotle. Its particular form was that of the acceptance of a minor premiss as a hypothesis on the strength of its "fittingness" to a known premiss and a factual conclusion. Thus, if a deduction were to take the following form:

> Rule--All the beans from this bag are white.
> Case--These beans are from this bag.
> Result--These beans are white.

then its corresponding abduction would be:

> Rule--All the beans from this bag are white.
> Result--These beans are white.
> Case--These beans are from this bag. (2.623).

Peirce said that in this case of "*making an hypothesis* . . . I at once infer as a probability, or as a fair guess, that this handful was taken out of that bag" (2.623). He at this point made no distinction between the evidencing nature of the abduction and its function as a source of the hypothesis itself. Moreover, we must notice the narrowness of the syllogistic context; for while Peirce's later view of abduction encompassed such hypotheses as finding

cases from rules and results, it also accounted for abductions which introduce entirely new classes of things into scientific theory. Indeed, it is probable that Peirce's recognition of this very narrowness led him toward his later conception.

At this early stage of his work Peirce still distinguished deduction from induction and abduction by the Kantian categories of explication and amplification. Deduction adds nothing new to thought; it merely works out the limits of a closed system. Induction and abduction, on the other hand, both add something new to thought: both provide possible or probable knowledge about an undetermined future. This distinction which Peirce maintained in some form throughout his writings was an early hint at Peirce's acknowledgment of the methodological aspect of logic. He suggested here that logic is not merely a matter of a closed system of thought but of open human inquiry. At this point in Peirce's thought the special role of abduction, as described above, was not essentially different from induction; indeed, Peirce called some abductions, as we saw, "inductions of characters" (2.632).

Peirce clearly held in this early view that abduction and induction shared functions but not forms; later, they shared neither. As we have seen, both were evidencing processes. But they were both also ways of arriving at hypotheses. Peirce's examples from 2.626 through 2.629 substantiate this much. The conflation was made explicit in his description of abduction as an induction of characters:

> A number of characters belonging to a certain class are found in a certain object; whence it is inferred that all the characters of that class belong to the object in question. This certainly involves the same principle as induction; yet in a modified form (2.632).

Once again this description can be placed in the syllogistic form. However, in his confusion at this time Peirce also began to see the leading ideas for his later view, for he recognized that despite the similarities, there were reasons, as we saw, for viewing abduction as

"a bolder and more perilous step" than induction (2.632).

Thus, at the same time that Peirce was conflating induction and abduction he was struggling to find what really made them distinct. His first attempt to clarify this point was an important stepping stone to his later position. Thus, he argued that "the essence of an induction is that it infers from one set of facts another set of similar facts, whereas hypothesis infers from facts of one kind to facts of another" (2.641). From this claim, which was first made in 1866 and was reused in 1878, followed Peirce's closing opinion that only abduction is truly originative and therefore ampliative in an important sense. Peirce was forcing himself to make further distinctions between the two kinds of reasoning: to emphasize their differences instead of their similarities. At this time he even went so far as to try to make a psychological distinction, arguing that "hypothesis produces the *sensuous* element of thought, and induction the *habitual* element" (2.643). By way of the categories, sense being a first and habit a third, this clearly foreshadowed the later order of the stages of inquiry. Peirce was on his way to his claim of 1905 that "Retroduction and Induction face the opposite ways" (2.755). However, he was in need of a vehicle through which the differences he was beginning to see could be made fully intelligible. Such a vehicle was implicit in Peirce's thought even at this time, but he was not yet ready to make the connections between this vehicle and his problem. The connection was made explicit only in 1902.

Fann, I think, is correct in identifying the source of Peirce's vehicle as his 1878 definition of logic as the method of methods [10]. In the concern for logic as method we see the shift away from understanding all inferencing and reasoning in terms of syllogisms only. Peirce here opened the door to his claim that modes of inference, while they maintain syllogistic forms, are stages of inquiry; thus he accounted for his 1898 interpretation of Aristotle's use of "*apagogue*" as both a logical form and a lived process. Not accidentally, I think, this view of logic coincided with Peirce's first emphasis on the ideas of growth and evolution. Logic, as a living normative science, encompassed, though it was certainly not

reduced to, a logic of inquiry [11]. Thus, for Peirce, one way of understanding logic was as a:

> serious inquiry; that is to say, a mode of life in which the energies of those who pursue it are directed toward the determination of that way of thinking about a given subject to which experience must ultimately bring all men who are long enough and fully enough under its influence (MS. 1342, p. II, 1).

In 1902, then, Peirce explicitly declared his change of mind:

> As long as I held that opinion [emphasizing syllogistic form], my conceptions of Abduction necessarily confused two kinds of reasoning. When, after repeated attempts, I finally succeeded in clearing the matter up, the fact shone out that probability proper had nothing to do with the validity of Abduction, unless in a doubly indirect manner (2.102).

Induction and abduction were separated; induction remained the only evidencing process for final opinions in Peirce's scheme and abduction was introduced in its final form as that process which leads not to the adoption of hypotheses as final opinions but to hypotheses themselves--to their adoption as pure "may-bes." Thus, probability proper which is a feature of induction can only affect abduction indirectly after some deductive process has been performed on the abduction to set up an inductive test. This passage is found in Peirce's introduction to his "Minute Logic" and we expect to find these matters clearly laid out in the corresponding chapter. However, Peirce preferred "not to make any prefacial sketch of this doctrine" and, as the editors of the *Collected Papers* point out, this particular section of the "Minute Logic" was apparently never written. Therefore, our understanding of the later version of abduction must rest on arguments made elsewhere.

Before moving on to my account of what abduction is, I want to present two views which I think misrepresent Peirce's position.

The first of these reduces abduction to induction and the second reduces induction to abduction. Neither claim seems reasonable in the light of Peirce's later arguments. Francis Reilly in his book, *Charles Peirce's Theory of Scientific Method*, argues that Peirce's theory of abduction is inconsistent because abduction is like induction, or is a form of induction, and induction is not originative. Therefore, Peirce's claim that abduction is originative cannot be sustained. There are two specific problems in Reilly's account. First, it seems to me, he misreads the 1903 writings on which he relies for his argument. Secondly, he fails to take account of the evolution of Peirce's theory of abduction.

Reilly's first error is his misunderstanding of Peirce's argument concerning the nature of inference; he misconstrues Peirce's claim that in abduction the abductive conclusion is given in the premisses (5.189-194). We must first dissociate the claim from deduction in which a conclusion is given necessarily by its premisses, for abduction is a form of logical but weak argument: "The conclusion of abduction is problematic or conjectural . . ." (5.192). Reilly's problem is that he does not distinguish, as Peirce did, between knowledge and perception (5.181). While Peirce argues that the elements of an abduction must come from perception, logically not temporally, Reilly holds that "in abduction, before we can place an item within a general class, we must previously know that general class. Such knowledge comes ultimately from experience, perhaps of other items within the class" [12]. This leads Reilly to argue that abduction is not originative.

Let us take as an example the discovery of gravity. Peirce saw this as a case of creative abduction. A scientist begins with a problem which needs solving but which no known law or idea can hypothetically explain. Next the scientist perceives a new law which may solve the problem [13]. In this case, it is the law of gravity. This concept or law creates a new class of things--things which adhere to the law of gravity--which was not previously known. The concept "gravity," then, the perception of which cannot be doubted, is a hypothesis in an abductive inference.

Peirce's point is that the new concept, "gravity," is not present in the premisses in the sense that it is something already known (*in intellectu*)--gravity was not known before its first hypothetical use. However, "gravity" is "in the premisses" in the sense that there is a logical relation between premisses and conclusion. In other words, "gravity" must explain the problem at hand in order to fit into the abduction. Historically put, "gravity" is implicit in the nature of the universe but it is not *known* until it is discovered [14]. And discovery takes place by way of creative thought which is then tested for its reasonableness. Thus, the abductive hypothesis, "gravity," is perceptually implicit in the premisses but it is not reducible to what was previously known about the cosmos. It is in this spirit that Peirce argued that the "first emergence of this new element into consciousness must be regarded as a perceptive judgment" (5.192). Again, Newton cannot deny that he perceived the concept of gravity. However, Peirce continued, "the connection of this perception with other elements must be an ordinary logical inference, subject to error like all inference" (5.192). This is not to say that an abduction does not intimately involve a perception, but only that the two are distinct even if cotemporaneous. Thus, when Peirce argued that the premisses somehow contain the conclusion, he was not arguing for a reduction to past knowledge as Reilly wants to suggest; on the contrary, he believed that abductions can involve entirely new ideas such as "gravity."

Reilly's contention is that because the perception of "gravity," as a concept, is logically prior to its use in an abductive inference, it must precede the abduction temporally as well and therefore must constitute a "known" class. Thus, Reilly's interpretation eliminates radical originality from abduction: "The newness and originality seem to be in predication, in asserting that an object or an event may possibly belong to a known class of objects or events" [15]. As conjectures, not evidencing processes, some abductions may be of this kind: the helicopter example for instance. However, not all are like this. Peirce clearly expressed his belief in the possibility of novelty in abduction: in the real growth of science and in the fact that an abduction can at the same

time call a new concept into being and employ it in a logical inference.

Reilly's initial misreading leads to his second problem, for in reducing abduction to classification he makes it parallel induction which can only be original in synthetic clarification--that is, which is not original except in being ampliative, as extending what is already known. In making abduction non-originative he limits its significance for the growth of science to the same status as that of induction. Thus, Reilly argues that the "originality of the hypothesis does not consist in the discovery of a new class, but in seeing that the object of perception may be a member of a known class" [16]. Once again, we can admit that some abductions are of this nature, provided Reilly does not mean that we run an inductive test of the characters of the object. Then, of course, he would be reducing Peirce's later view of abduction to his earlier view of it as the induction of characters. In this way he would essentially reduce abduction to induction. However, Reilly need not intend this, for he may still distinguish between evidencing and conjecturing though both for him are non-originative. But in this case we must recall that Peirce explicitly defended the originative function of abduction. Indeed, it was integral to his understanding of the growth of science; abduction is the source of growth, of creativity, in science. If, as Reilly suggests, all abductions were reducible to antecedent concepts, then the history of science would be at least in part determined at the outset of the cosmos, a view which Peirce expressly denied in his anti-necessitarian writings. Thus, whatever the intent of Reilly's interpretation of abduction, it clearly fails to come to grips with Peirce's later view--it ignores the evolution of Peirce's theory.

William Davis presents the contrary view. Whereas Reilly, at least implicitly, suggests that abduction is reducible to induction, Davis argues that induction reduces to abduction [17]. Unlike Reilly, Davis begins by asserting the originative function of abduction; he describes it as "the creative act of making up explanatory hypotheses" [18]. On the positive side, Davis, I think, gives as good an account of Peirce's notion of abduction as is

available. Where he errs is in trying to make induction into a form of abduction. This move ignores Peirce's division of normative logic not only into modes of inference but also into stages of inquiry. Thus, no matter how similar these two may appear as modes of inference, they are distinguished clearly and sharply by their opposed roles in inquiry. Put another way, Davis ignores his own point that abduction is a process of creative conjecturing, not of evidencing. And this, I believe, is once again related to a failure to acknowledge the break between Peirce's early and late versions of abduction.

Davis argues that he is following Buchler in maintaining that induction and abduction "are not independent" [19]. Yet, there is a crucial difference between "x is not independent of y" and "x is a subsidiary form of y." Peirce, as Buchler points out, clearly argued that inductions are, or at least ought to be, dependent on abductive hypotheses. This is fundamental to Peirce's entire theory of inquiry, because induction tests hypotheses. But it does not follow that induction is a form of abduction. The reason for this is clear; indeed, Davis himself expresses it, but fails to see the significance it has for his own view.

Davis sees Peirce's theory of abduction as a solution to the traditional problem of induction raised by Hume: that is, induction cannot lead us to certain or probable beliefs. As Popper points out, it cannot rightly even lead us to habits [20]. Thus, induction cannot produce conjectures or hypotheses. Its function is properly that of attesting to or, again in Popper's terms, of refuting given hypotheses. Therefore, abduction is the solution to the problem because it is the source of the hypotheses which induction must refute. It is from this dependence that Davis seems to derive his belief that induction is a form of abduction.

While I think Davis's argument is well-intentioned, it is wrong as regards what Peirce himself thought. It is well-intentioned because Davis wants to show that abduction "is the *only* truly *synthetic* operation" [21]. In other words, in Peirce's early discussions of the problem he maintained that both induction and abduction were forms of synthetic inference. Thus, if Davis can

subsume induction under abduction, then he has only one *kind* of synthetic operation, not two, with which to deal. In this way he saves Peirce's system from falling into the Baconian error of believing that induction leads to hypotheses, an error Davis thought Peirce had not overcome [22]. However, Peirce seemed well aware of the issue. When he said in 1903 that abduction is "the only logical operation which introduces any new idea," this is what he meant (5.171). Peirce's later position explicitly stated that only abduction is truly synthetic. This is not achieved, however, by subsuming induction under abduction, but by giving it another role entirely: "Induction consists in starting from a theory, deducing from its predictions of phenomena, and observing those phenomena in order to see *how nearly* they agree with the theory" (5.170). The difference is that abduction leads to hypotheses while induction tests them. Therefore, Davis is clearly wrong in arguing that induction is a form of abduction, for in doing so he admits that induction leads to hypotheses, albeit "mechanically" and with "a low order of creativity" [23]. Indeed, Davis implicitly admits his oversight when he points out that "*scientific reasoning does not depend on induction at all*" but rather that it "depends upon the mind's ability to have insights" [24]. In short, induction does depend on, or involve, abduction; but to suggest that it is a form of abduction is to misrepresent Peirce's position.

Essentially, Davis creates one problem in trying to solve another. Unfortunately, the problem he sought to solve--that there are two kinds of synthetic reasoning--was not a problem for the Peirce of 1903 and later. Indeed, the primary evidence for Davis's view, at 2.640, was written in 1878. Like Reilly, Davis fails to distinguish explicitly the two versions of abduction. The confusions of Reilly and Davis are perhaps not of great importance, but they do provide us with some insight into abduction by showing us what it is not. The relation Peirce established between abduction and induction, as we shall see, must be viewed in light of the stages of inquiry which Peirce described. We will see these problems arise again in another context.

While Peirce was aware of the problem of confusing and/or

conflating abduction and induction, he seemed never to have feared that abduction might be confused with deduction. He thought the two were clearly enough separated by the generic division into ampliative and explicative types of reasoning. There is a related problem, however, of which Peirce was well aware. This is the claim that there is no such logical or scientific process as abduction, that only deduction and induction are logical processes. Fann, W.M. Brown, and N.R. Hanson all cite Popper and Reichenbach as opponents of the very idea that abduction or hypothesis creation is "logical" in any sense. Popper argues: "The initial stage, the act of conceiving or inventing a theory, seems to me neither to call for logical analysis nor to be susceptible of it" [25].

Rescher is, I think, correct when he argues that Peirce's overall scientific method "is virtually indiscernable from the conjecture-and-refutation model of scientific inquiry advocated by K.R. Popper in the present century" [26]. The two positions are alike in many ways. However, he is also correct in pointing out that the two part company at the point we have just mentioned. Rescher argues that for Popper "science becomes an accident of virtually miraculous proportions, every bit as fortuitous as someone's correctly guessing at random the telephone numbers of someone else's friends" [27]. For Peirce, however, because abduction was not a matter of pure chance, science was understandable. As Rescher says, "Peirce insists that trial and error cannot adequately account for the existing facts. . ." [28]. Peirce believed that abduction was logical but not that it was deductive; this is a distinction, allowing mediation between chance and logical determinism, which Popper seems unwilling to make. It is a simple point of disagreement but an important one, especially as regards Peirce's theory of abduction and the possibility of creativity in science.

Peirce saw the attack on abduction as a disbelief in a scientist's control in obtaining hypotheses and, therefore, over scientific inquiry as a whole. He viewed it as an escape into a tychism or theory of historical chance which he could not accept. He defended his point by example:

> Think of what trillions of trillions of hypotheses might be made of which only one is true; and yet after two or three--or at the very most a dozen guesses, the physicist hits pretty nearly on the correct hypothesis. By chance he would not have been likely to do so in the whole time that has elapsed since the earth was solidified (5.172).

Peirce believed there must be a reason behind the conjectures made by abduction and for him this presupposed some rational control of the process by the scientist. Moreover, because thought under self-control is reasoning, it admits of logical analysis--that is, it should exhibit some logical form.

The role played by self-control was crucial for Peirce and for his belief in scientific creativity. If the process of creative hypothesis construction were purely tychistic, or purely passive, then it would make no sense to attach value to it. As Peirce argued: "To criticize as logically sound or unsound an operation of thought that cannot be controlled is not less ridiculous than it would be to pronounce the growth of your hair to be morally good or bad" (5.108). The upshot of course is that on Popper's view, in which abduction is tychistic, we should make no effort at all to understand creativity in science. As Davis points out, this is precisely what has occurred in the history of the philosophy of science: in the past by mechanists or deductivists who denied creativity but provided explanation and in the present by tychists who deny explanation and therefore creativity as well [29]. Peirce saw his challenge as that of mediating these extremes and this was what his theory of abduction attempted to do. For Peirce, it seemed an absurdity to argue that Kepler, Newton, Einstein and others were simply lucky.

His answer to the problem was what we have already pointed out: logic goes beyond the bounds of closed deduction. One of its aspects is the logic of inquiry. As such, logic became for Peirce the third of the normative sciences. Logic was the theory of how persons, scientists in particular, ought to reason. In this way

Peirce tried to update Aristotle's intimations of a logic which addresses human inquiry as lived and the form which that inquiry ought to take. Because this turn is crucial, I quote from Peirce's "Minute Logic" at length--notice here that Peirce characterized the modes of inference with which logic is concerned in their order of strength as logical arguments (viz., deduction, induction, abduction), not in their order of dependence:

> When our logic shall have paid its *devoirs* to Esthetics and the Ethics, it will be time for it to settle down to its regular business. That business is of a varied nature; but so far as I intend in this place to speak of it, it consists in ascertaining methods of sound reasoning, and of proving that they are sound, not by any instinctive guarantee, but because it can be shown by the kinds of reasoning already considered, especially the mathematical, of one class of reasonings that they follow the methods which, persisted in, must eventually lead to the truth, to an indefinite approximation thereto, while in regard to another class of reasonings, although they are so insecure that no reliance can be placed upon them, it will be shown in a similar way that yet they afford the only means of attaining to a satisfactory knowledge of the truth, in case this knowledge is ever to be attained at all, doing so by putting problems into such a form that the former class of reasonings become applicable to them (2.200).

Abduction, despite its "weakness" as an argument form, is nevertheless that logical form on which all scientific reasoning depends.

Therefore, logic is no longer viewed as a closed system of static maxims which repels men from its study "because they find its rules so nugatory and foreign to the spirit of true science . . . " (2.201). It becomes the normative science of reasoning; as Karl-Otto Apel argues, for Peirce "cognition was seen as a historical process manifested in language and society which, from the standpoint of its unconscious foundations, forms a continuum with

the evolutionary process of nature, but which, at the other conscious extreme, is subject to 'self-control' through normative logic" [30]. Now, within this understanding of logic as a method of reasoning, or method of method, abduction plays a special role. It is the first level of self-controlled reasoning and it therefore, on Peirce's view, ought to be the foundation of scientific inquiry. Peirce laid this out in his description of scientific method in his 1901 article "The Logic of Drawing History from Ancient Documents" (7.202). Science begins with a problem for which a hypothesis must be found; the finding of the hypothesis is abduction. This of course is our connection with scientific creativity, for whatever creativity there is in science must begin in abduction. As Peirce put it: "All the ideas of science come to it by way of abduction" (5.145).

Peirce thus anticipated Popper's problem. He attempted to overcome it by broadening his conception of logic to include ampliative reasoning. In this much, he was clearly original as a philosopher of science. However, Peirce's mediating turn drew fire from several quarters and still does today. In general these attacks reduce to the charge that Peirce entertained a fundamental paradox by making abduction a matter of both insight and inference. As Harry Frankfurt puts it: "We are, then, faced with the seeming paradox that Peirce holds both that hypotheses are the products of a wonderful imaginative faculty in man and that they are products of a certain sort of logical inference" [31]. Specifically, the attacks are as follows: 1) Peirce's account of the inferential form of abduction precludes its originative function and therefore its insightfulness, 2) Peirce's admission that abduction is instinctual precludes its having an inferential form because it makes abduction tychistic, and 3) Peirce's descriptions of abduction establish it as an intuitionistic process which must also preclude logical form [32]. Of course, Peirce's answer to all three charges, as it would be to Popper above, would be that their defenders have failed to understand his meaning of logic and, more importantly, have failed to observe the historical facts of science whose explanation is at issue. Nevertheless, to save Peirce from question begging, and at

the expense of repeating much of what we have already covered in the discussion of induction, it is necessary to examine these charges somewhat more closely.

It is on the very issue of whether abduction is an insight or an inference that many Peirce scholars disagree. Some choose one side or the other and defend it. This entails that some Peirce scholars, such as Frankfurt, also argue that it is on this very point that Peirce himself faltered, for he made claims in both directions. In answer, I want to argue that Peirce did not hold the ideas of insight and inference to be mutually exclusive with respect to abduction.

The best evidence for this view is that Peirce quite explicitly stated that abduction is both an insight and an inference. This is a fact to be explained, not to be explained away. In the confines of a single lecture in 1903 Peirce said the following: "The abductive suggestion comes to us like a flash. It is an act of *insight*, although of extremely fallible insight" (5.181). And, "It must be remembered that abduction, although it is very little hampered by logical rules, nevertheless is logical inference, asserting its conclusion only problematically or conjecturally, it is true, but nevertheless having a perfectly definite logical form" (5.188). Clearly this is not a case of careless inconsistency stemming from writing at different times. Peirce quite intentionally conjoined insight and inference in his description of abduction. Acknowledging that this was Peirce's position, then, let us proceed to the specific criticisms.

Frankfurt provides an instance of the first kind of attack. He argues that if abduction takes the logical form which Peirce gave it, then it cannot be insightful or original. As we shall see, his argument amounts to the same thing as Reilly's attempt to reduce abduction to induction. At 5.189 we find the following tentative account of abduction:

> The surprising fact, C, is observed; But if A were true, C would be a matter of course, Hence, there is reason to suspect that A is true. Thus, A cannot be inductively inferred, or if you prefer the expression, cannot be

> abductively conjectured until its entire content is already present in the premiss, "If A were true, C would be a matter of course."

Frankfurt argues, "Clearly, if the new idea [A], or hypothesis, must appear in one of the premisses of the abduction, it cannot be the case that it originates as the conclusion of such an inference; it must have been invented before the conclusion was drawn" [33]. He then argues: "Furthermore, the conclusion of the abduction is not the hypothesis itself . . . but a statement that there is evidence for the hypothesis" [34]. How can Peirce respond?

First, Frankfurt takes the written form not only too literally, but also out of the context of the rest of what Peirce says concerning abduction. Surely Peirce meant that "possibly A" is the conclusion. In short, the argument looks like this:

> C and (A>C): then, A.

This resembles an inversion of *modus ponens* just as Peirce's earlier accounts of hypothesis, including his 1898 comparison with Aristotle, resembled inversions of deductions in Barbara (See 2.623 ff.). That is, if the argument were to be put in its deductive form, A would be a premiss and C a conclusion. It is in this way only that A is a premiss, just as in the earlier version the hypothesis was the minor premiss formally while being the conclusion of the abductive process. Therefore, it seems clear that, contrary to Frankfurt's claim, hypotheses do "originate as the conclusions of abductions" [35]. This is not to deny the minimal evidencing nature of abduction which, as we saw, holds that the conclusion should be a possible explanation of the problematic fact. Rather, it shows that such a nature is one of the formal constraints on the conclusion; it is not, as Frankfurt seems to think, a material element of the conclusion.

This, I think, accounts for Frankfurt's second objection; however, for his first objection we must recall our answer to Reilly. Like Reilly, Frankfurt appears to confuse logical and temporal priority. Once again, when Peirce said that A must already be in

the premiss, A>C, he meant that the logic of the abduction is constrained by the explanatory power of A. This is precisely what he said just before giving the description we have been discussing: "Namely, the hypothesis cannot be admitted, even as a hypothesis, unless it be supposed that it would account for the facts or some of them" (5.189). In this sense, the "A" in A>C is logically prior to the "A" in the conclusion [36]. However, it is also clear that the two "A's" are one and the same. Therefore, in temporal terms they may be simultaneously arrived at; it does not follow that A "must have been invented before the conclusion was drawn" [37]. As I argued earlier against Reilly, on Peirce's view it is possible for the hypothesis and its abductive application to occur together. Therefore, abductions may be insightful and originative and still have logical form.

I see no other reason why Peirce's formal description of abduction, which by his own admission is minimal, should preclude insightfulness. Were it a case of deduction, or similarly, were one to reduce logic to deduction, one might argue that the form precludes originality because the conclusion is necessitated by the premisses: that is, that the premisses are merely explicated by the conclusion. However, Peirce clearly denied this problem in his distinction between explicative and ampliative logic. Abduction is a possibilistic argument--a mere "may be" as Peirce stated it (5.171). Therefore, such a charge seems fruitless against his view.

The other way to attack Peirce on this point is to argue that an insight cannot have a logical form. As we saw, this takes two forms. The first form of this argument hinges on Peirce's explicit descriptions of abduction as an animal instinct. The argument runs as follows: Peirce said that abduction is an instinct for scientific insight; instinctive insight is a matter for psychology and has nothing to do with logical form; therefore, abduction is not a logical inference.

To be sure, Peirce did argue that abduction was connected with human instinct; the ability to make scientific conjectures is the distinctive human instinct. In the lecture previous to the one we have been discussing (also 1903) Peirce described his view at

length:

> However man may have acquired his faculty of divining the ways of Nature, it has certainly not been by a self-controlled and critical logic. Even now he cannot give any exact reason for his best guesses. It appears to me that the clearest statement we can make of the logical situation--the freest from all questionable admixture--is to say that man has a certain Insight, not strong enough to be oftener right than wrong, but strong enough not to be overwhelmingly more often wrong than right, into the Thirdness, the general elements, of Nature. An Insight, I call it, because it is to be referred to the same general class of operations to which Perceptive Judgments belong. This Faculty is at the same time of the general nature of Instinct, et al. (5.173).

Elsewhere Peirce frequently wondered at how man's reasoned ideas correspond or run parallel to the facts of the world itself. Thus, man has a general instinctive faculty to guess the truth. First, let us note that this explanation of abduction itself is an abductive hypothesis which Peirce suggested in answer to the question of how scientific knowledge could ever begin, a question Popper says we should not ask except psychologically [38]. That is, it tells us how man can ever get *any* truth about the nature of the universe. Now, the argument seems to be for a general faculty as a necessary condition for man's scientific knowledge--the instinct is not a mechanical or biological reduction of the abductive process [39]. The abductive instinct relates to abduction as man's vocal ability relates to spoken language; it is a necessary but not a sufficient condition for the latter's occurrence. Certainly, our vocal ability is not sufficient for spoken language and particularly not for excellence in speaking. Thus, the instinct of insight is not a mechanism which determines our specific guesses, but it is an ability which allows us to guess at the truth. In Peirce's words: "In regard to instinctive considerations, I have already pointed out that it is a primary hypothesis underlying all abduction that the human mind is akin to the truth in the sense that in a finite

number of guesses it will light upon the correct hypothesis" (7.220, see also 6.530, 5.591, 5.604, 6.476).

Now, as long as the insight instinct is not deterministic psychologically, there is no reason that abductions which take place through instinct cannot have logical form. And since Peirce's descriptions of the instinct did not suggest a deterministic reduction and because his disapproval of necessitarianism in general was clearly established, he was able to consistently maintain that abduction has a logical form. The instinct argument leaves us with only one other problem and this is properly dealt with by Rescher.

The problem is that scientific inquiry is made to depend on a claim which is itself a scientific hypothesis. In other words, science depends on our instinctive ability to guess well and the existence of this instinct is merely a hypothesis proposed to explain how science can work; thus, we have a circular argument. However, as Rescher points out, the circle is not vicious. "If the efficacy," he says, "of scientific reasoning is indeed to count as an established fact, we should certainly expect to have a scientific account of it" [40]. In short, any theory of scientific inquiry must make some such claim. What makes Peirce's position even more attractive is that instinct *is* only a necessary condition for science to begin. As Rescher argues, "Peirce does not make science self-substantiating on this [the abductive] claim alone, but opens it to critical testing in induction" [41].

Our second problem, then, is to address the charge that Peirce's theory of abduction is fundamentally intuitionistic and therefore must exclude logical analysis. The most obvious approach to this charge is to point out that nowhere in his writings did Peirce say that abduction is intuitive. Indeed, throughout his work he was strongly antagonistic toward any intuitionism which argued that new ideas could be obtained outside of some context. This is why he attacked Descartes in his early writings (5.213). For Peirce, any insight must be mediated by its context. However, there are more specific reasons why such a charge does not address Peirce's theory of abduction. First, Peirce's abduction is entirely fallible: "It is an act of *insight*, although of extremely fallible insight"

(5.181). Joseph Esposito states it accurately when he says that though Peirce admitted the importance of firstness in abduction, he "would still deny that cognition could ever supply its own warrant, or that the feeling of immediacy could be apodictic" [42]. As an act of reasoning from a state of affairs to a conclusion, abduction is a thoroughly possibilistic form of inference. The common notion of intuition, however, is that of infallible, unmediated knowledge. Thus, for example, an intuitionist will grant Kepler's or Newton's abductive guesses to be intuitions, but is less likely to admit the work of Herbert Spencer. Peirce's theory of fallible abduction admits both. The point is that Peirce's view accounts for all hypotheses, whereas intuition is usually reserved for application to those hypotheses which are historically deemed good. In this fundamental sense, then, Peirce's abduction was not intuitive. Moreover, insofar as Peirce's position accounted for more of our actually experienced reasoning--that is, our failures as well as our successes--it also seems the more reasonable view of scientific inquiry.

The final distinction Peirce made between his abduction and intuition is the crucial one and will lead into a description of how Peirce finally handled the paradox of the insightfulness and the logicality of abduction: this is the distinction between a hypothesis which is thought about and one which is not. For Peirce, abduction presupposed a certain amount of work by the investigator. First, unlike intuition, which is wholly unmediated (5.213, n. 1), abduction takes place *in medias res* and is influenced by previous thoughts. Kepler did not make his abduction of elliptical orbits without first having immersed himself in the data of Brahe's investigations. As Dewey might have put it, abduction needs funded experience to begin (2.755). Secondly, the problem itself, which the abduction is out to solve, must be thought about. One might suppose this is the case with intuition as well; however, if intuition is unmediated there is no reason it cannot take place away from the context of the problem and without any effort on the part of the investigator. Again, so far as most "intuitions" do occur when a problem is thought about, Peirce's abductionism

seems to fit better with experience than does intuitionism. In conclusion, then, Peirce denied that abduction is merely intuition and thereby denied the implicit claim that the beginnings of science can only be studied psychologically if at all.

All of the charges we have been examining hinge on the claim that Peirce confused the logical with the psychological; that he presented abduction as an unresolvable paradox. His answer was that abduction involves both sides of the paradox so far as it is a stage of scientific inquiry. Versus Frankfurt's kind of argument, Peirce maintained that abduction's logical form did not preclude its being insightful or being the source of new ideas. On the other hand, he denied that abduction is either a mechanical instinct or an intuition which might only be understood by psychology. Abduction involves both logic and psychology, but neither exclusively. The descriptions of abduction as insight pertain to the psychological side of abduction, especially through the use of such terms as "flash of insight," "guessing," and "feeling" (7.219, 2.643). These are the psychological facts which do or can accompany the normative inference which scientific reasoning ought to follow. In 1902 Peirce explicitly stated his view of the matter: "it is also to be borne in mind that there is a purely logical doctrine of how discovery must take place, which, however, great or little is its importance, it is my plain task and duty here to explore. In addition to this, there may be a psychological account of the matter, of the utmost importance and ever so extensive" (2.107). The point is well taken, for surely a discussion of scientific creativity is interested in psychological aspects of the creative process. In any event, with regard to the attacks on Peirce's theory of abduction, Fann's warning is essential:

> It is true that Peirce did not always keep the distinction [between the psychological and logical aspects of abduction] in his writings, but in order to have a clear understanding of Peirce's theory of abduction it is necessary for us to keep the distinction in mind [43].

From the logical side, it seems that critics simply expect too much from the logical form of abduction. As we saw earlier, the form itself is quite trivial. For Peirce, the form of an abductive inference needed only make a hypothesis render a conclusion unsurprising; it was a possibilistic inference whose test was in the future and it did not give us only one answer to each problem or set of premisses. If we ask the form to give us the correct hypothesis each time it is employed, we are asking too much. This again is the point of Peirce's distinction between logical validity and logical strength at 5.192. As Peter Skagestaad puts it: "the mere fact that a proposed hypothesis serves as a minor premise only shows that it is a possible explanation; this fact does not in and of itself give us any reason to believe that the hypothesis is the true explanation" [44].

Thus far I have been trying to give a general account of what Peirce's later opinion of abduction was and was not. I want next to look at the ways in which Peirce held abduction to be creative. As I suggested above, and as both Fann and Goudge maintain, there are degrees of creativity in abductive inferences [45]. Here I want to consider the most creative. This will lead us to discuss several of Peirce's metaphysical and psychological concepts in their special applications to scientific inquiry. The key to this investigation lies, I think, in Peirce's categoriology. Abduction is the first stage of scientific inquiry and, as Peirce remarked in his early works, it is most closely related with the sensuous form of reasoning; in short, abduction is the branch of reasoning which emphasizes the characteristics of the category of firstness. Therefore, if we take Peirce's descriptions of firstness and apply them to abduction, we should be able to observe some aspects of its creative function. Let us begin, then, with Peirce's 1890 description of the category of firstness:

> The idea of the absolutely first must be entirely separated from all conception of reference to anything else; for what involves a second is itself a second to that second. The first must therefore be present and

> immediate, so as not to be second to a representation. It must be fresh and new, for if old it is second to its former state. It must be initiative, original, spontaneous, and free; otherwise it is second to a determining cause . . . . What the world was to Adam on the day he opened his eyes to it, before he had drawn any distinctions, or had become conscious of his own existence--that is first, present, immediate, fresh, new initiative, original, spontaneous, free, vivid, conscious and evanescent. Only, remember that every description of it must be false to it (1.357).

The final sentence of course causes us to wonder. However, as Peirce applied his categories to things in the world, he took account of their context. Abduction, in being a form of reasoning, is essentially a third. In being a stage of scientific inquiry in his speculative rhetoric, or methodeutic, and normative logic, abduction is a third of a third [46]. However, in being the first stage, the sensuous form of reasoning, it is a first of a third of a third. Therefore, unlike a pure first it can legitimately be talked about; its firstness manifests itself in abduction's emphasis on the characteristics of firstness within its own context.

The firstness of abduction, then, tells us some things about its mode of self-control. First, abduction, in being the first of scientific reasoning, is the closest such reasoning gets to feeling, which is the first of the categories of consciousness (2.643). This is characterized by the fact that abduction is a logically weak form of argument. Thus, abduction exhibits one kind of freedom insofar as it is the least inhibited of scientific reasonings by both inferential rules and forms (5.188). As regards the reasoner, he is less inhibited than he would be in induction or deduction. Secondly, abduction is freer in the sense that, as a process, it is somewhat free of the reasoner's work. In this much, then, the reasoner is less free so far as he is under the sway of ideas themselves (MS. 442, p.32). Now, both of these aspects of freedom--that of agent and that of process--are indicative of feeling. On the one hand, an agent's feeling, which is tied in consciousness to imagination, is

only weakly restrained by rules of inference; on the other hand, feeling "insists" itself upon the agent.

We can expand on this description of abduction by recalling Peirce's view of the relation between abduction and perception. Peirce argued that abduction and perception are part of a continuum: that abduction shades into perception. "The only symptom, " he said, "by which the two can be distinguished is that we cannot form the least conception of what it would be to deny the perceptual judgment" (5.186). What perception is, then, is unconscious abduction, much like a Kantian synthetic unity of the manifold. Abduction, on the other hand, is the limiting case of self-controlled thought: "An abductive suggestion, however, is something whose truth *can* be questioned or even denied" (5.187). Elsewhere Peirce distinguished the two by their specific relations to time:

> Conclusions of reasoning can little resemble *perceptual facts*. For besides being involuntary, these latter are strictly memories of what has taken place in the recent past, while all conclusions of reasoning partake of the general nature of expectations of the future (2.145, see also 7.198).

The result of this relationship is that abduction, in its firstness, in bordering on perception, is the closest reasoning gets to non-reasoning [47]. It is at best a form of passive control. Whereas in deduction and induction we work with ideas we select or have selected (i.e. hypotheses), in abduction we are fishing for an idea itself--"Abduction seeks a theory" (7.218). In abduction a reasoner must let the ideas or facts of perception have free play. That is, he is in control insofar as he opens himself to the ideas themselves. Thus, his hypotheses are pure possibilities, not even probabilities. Peirce provided an example of this feature of abduction in his "Humble Argument" in "A Neglected Argument for the Reality of God."

Peirce was here arguing for a scientific argument for the

reality of God [48]. That is, he was proposing God's reality as a hypothesis. He began by describing the frame of mind in which the hypothesis may arise: "In fact, it is Pure Play. Now, Play, we all know, is a lively exercise of one's powers. Pure Play has no rules, except this very law of liberty. It bloweth where it listeth" (6.458). Notice, then, that abduction is 1) under the active control of the agent and 2) at the same time, a complete openness to ideas. Abduction takes place by allowing the law of freedom. From this point, Peirce added, the mind can take one of three turns: 1) it can remain in esthetic contemplation, 2) it can let the imagination run free ("distant castle building"), or 3) it may take the form "of considering some wonder in one of the three Universes [essentially, the instantiations of the categories, see 6.455], or some connection between two of the three, with speculation concerning its cause" (6.458). Here Peirce suggested a distinction within abduction; that is, he suggested that artistic abduction was distinct from scientific abduction. When we make the turn to artistic creativity, we will examine this point in more detail. For now, it is important to recognize the third choice as the beginning of scientific inquiry, insofar as all scientific inquiry begins with an anomaly in need of a reason.

This last state of mind, which encompasses the necessary "scientific singleness of heart," Peirce called "musement" (6.458). In his description of it he placed abduction within the continuum of reasoning:

> It begins passively enough with drinking in the impression of some nook in one of the three Universes. But impression soon passes into attentive observation, observation into musing, musing into a lively give and take of communion between self and self (6.459).

Scientific abduction, as musing, employs self-control insofar as it allows ideas free play with an eye toward explaining a problem at hand. Recall Peirce's letter to Calderoni in which he said that abduction "consists in examining a mass of facts and in allowing

these facts to suggest a theory" (8.209). In inquiry, then, abduction mediates between uncontrolled perception and the more closely controlled processes of induction and deduction which, because they are modes of testing (or, more properly, of refuting), must take place in the interaction within a scientific community.

This dual aspect of the freedom of firstness--freedom of agent and freedom of process in the play of ideas--again exemplifies Peirce's mediation of the paradox of inference and insight. Abduction is inference because the agent is free to control his reasoning and it is insight because it allows ideas to suggest other ideas. Both freedoms also encompass the element of spontaneity which firstness entails. It is the discontinuity of spontaneity (between the past and the future) which allows for "new ideas." However, I want to save detailed discussion of this point for our chapter on God's creativity, for it was in his accounts of evolution that Peirce most fully developed it.

The other two characteristics of firstness I want to discuss are initiation and originality. In a trivial sense of course abduction is initiative by virtue of its being the first stage of scientific inquiry--it initiates an inquiry in attempting to come to grips with a surprising fact. At another level, abduction is the source of new ideas. Together with self-control, originality is central to Peirce's notion of scientific creativity. "Abduction," he said, "is Originary in respect to being the only kind of argument which starts a new idea" (2.96). However, just as abductive freedom is limited by the thirdness of reasoning, so is originality limited. It is not pure, ontological originality in relation to the ideas and perceptual facts at hand. Hypotheses can be original, but only if they still may explain the facts in question.

While Peirce held this relative scientific originality of initiating new ideas to be central to abduction, he seemed to admit several degrees of originality. In view of his emphasis on continuity, this is not surprising. Abduction, he said, "strikes out a new suggestion" (MS. 438, p. 16). And yet in what sense the suggestion is new is not clear:

> Now there have been various attempts to explain what originality consists in; but none of those that I have seen have been at all satisfactory. May it not be that although an idea of absolute orignality is extremely infrequent, yet even in ideas not absolutely original there is a real factor of originality not altogether explicable by association (MS. 438, p. 17)?

Later Peirce provided a more positive account of originality in a manuscript entitled, "On Five Grades of Originality in Logic." By this time (c. 1903), Peirce's conception of logic had broadened to encompass both the form of reasoning and the method of inquiry. However, in this instance Peirce was directing his thought toward a treatise by Royce which was "strictly confined to exact logic" (MS. 816, p. 2). Though we cannot directly apply this description to scientific inquiry, because exact logic was a species of science for Peirce, we can certainly apply it by analogy. The five grades (not kinds) of originality are: 1) "showing for the first time that some element, however vaguely characterized, is an element that must be recognized as distinct from others," 2) "to show that this or that element is not needed," 3) "giving distinctness,--workable, pragmatistic distinctness,--to concepts already recognized," 4) "constructing a system which brings truth to light," and 5) "illuminative and original criticisms of the works of others" (MS. 816, pp.2-6).

Unfortunately, Peirce did not fully elaborate on the five grades. Still, we can see that the highest grade is that of a "new idea" which presumably can come only through abduction. At first it might seem that Peirce was only glorifying the art of making distinctions among ideas. However, in showing "for the first time" that an element "must be distinct from others," a logician is quite obviously presenting us with a new idea, even if the term be old. Peirce gave as examples Aristotle's definition of continuity and his attempt to define "entelechy." Aristotle presented these new conceptions as solutions to old philosophical problems, much as Newton presented gravity and force as new ideas.

None of the other four grades of originality seems to be

involved directly with abduction, though all are clearly indirectly related. Thus, while abduction has its own degrees of originality, these appear not to be displayed in this particular ordering. Case 2 is simply an attempt to show that some element is not needed, as when Berkeley tried to dismiss the need for matter in the universe. While this may depend on or be related to an original abduction, it is not itself such an abduction. Likewise the third grade relies on an abduction inasmuch as it is the explication of some new element or idea; this corresponds to originality by deduction. And the fourth grade is a way of organizing a new idea into some systematic view. In short, each of these, while depending on an abduction for its matter, is essentially explicative. Moreover, the final grade, criticism, really seems to come into play in the inductive or testing stage of inquiry. Thus, originality runs throughout the stages of inquiry. However, for scientific creativity we are primarily interested in the first grade which occurs in abduction, for it is this originality upon which all the others depend.

The importance Peirce himself placed on the first grade leads us to another characteristic of firstness which is embedded in originality itself: that is, novelty. Peirce emphasized the newness of ideas and attached the idea of freshness to firtness. We have seen above that originality does not always entail radical novelty; but when it does, we have a case of abduction presenting us with absolute originality. The next question we need to address, then, is how creative abductions are original in presenting novel ideas; in other words, what is the novelty involved?

At this point, I must step a bit beyond what Peirce or his commentators have explicitly stated. Novelty, as an element of Peircean scientific creativity, was dealt with only indirectly by Peirce himself. And of the commentators only Hartshorne and Hausman have looked at novelty, and they only in a more general way [49]. Peirce tended to let novelty lie in the arms of originality even though "newness" was a separate feature of firstness; he seldom separated the two. And yet there are clear suggestions as to what degrees of novelty are possible in the first grade of originality. These I take to be important for our analysis of

scientific creativity so far as they provide one more focussing distinction in our understanding of the continuum of creativity itself.

For Peirce, in the "evolution of science, guessing plays the same part that variations in reproduction take in the evolution of biological forms, according to the Darwinian theory" (7.38). The "whole noble organism of science has been built up out of propositions which were originally simple guesses," Peirce continued (7.38). However, as his theory of abduction demanded, he qualified this last statement: "For my part I refuse to believe that either the one or the other were fortuitous" (7.38). Thus, new ideas ground the growth of science when they arise under the care of abductive reasoning. Their novelty, in being like biological variations, must be some combination of old and new; while the new may be *sui generis*, it is related to the past species of scientific ideas. Indeed, according to Peirce, all reasoning "is a new experience which involves something old and something hitherto unknown" (7.536). Original abductive reasoning is simply the most extreme example of this law; that is, it contains the old and new not only for one individual but for the history of science itself. The novelty it involves is therefore of a different kind. In providing the growth of scientific knowledge, it is reasoning *par excellence*--it is a part of the concrete reasonableness toward which all reasoning is directed.

In combining the old and new, scientific novelties are not radically new in the sense of having been created *ex nihilo* or of having been brought into being without relation. In short, they do not create their own referents; rather, they are new in presenting a new and better way of referring to what already is. Still, within this limitation, Peirce suggested two modes of scientific or abductive novelty: rearrangement and concept creation.

First, he said, new ideas may be combinations of old ideas. That is to say, we put old ideas together in a new way and this reorganization itself constitutes a new idea. When we are confronted with an anomaly, "we turn over our recollections of observed facts; we endeavor so to rearrange them, to view them in

such new perspective that the unexpected experience shall no longer appear surprising" (7.36). The first kind of novelty, then, is a combination which is different from past views, but which is grounded in ideas or perceptions we have already. "It is true," Peirce said, "that the different elements of the hypothesis were in our minds before; but it is the idea of putting together what we had never before dreamed of putting together which flashes the new suggestion before our contemplation" (5.181).

The second grade of novelty, which is not always easy to distinguish from the first, is the creation of a new concept--that is, of an idea which we have not previously had. For example, the invention of a new machine such as the cotton gin takes old ideas and puts them together in a new way. The idea of the cotton gin is new as a hypothesis to solve the problem of fixing cotton mechanically, but its newness is more combinatory than synthetic. On the other hand, when Peirce talked of new ideas, he suggested that radically new concepts can come into existence. For example, Newton hypothesized new concepts of force and gravity which he defined mathematically. Gravitation was not merely a rearrangement of old ideas about the cosmos, but was a new idea entirely. Not that Newton created gravity, but he created the concept of gravity. And this concept was radically new as an element of scientific knowledge. In terms of creative novelty, it seems a step beyond mere rearrangement [50]. This would be the level that Aristotle's "entelechy" works at as Peirce indicated. It is in this level of novelty, then, that scientific creativity is most apparent through abductive inference.

How far this distinction between the two grades of novelty goes is not clear. When pushed, it seems at best a distinction of degrees. Nevertheless, Peirce implied the distinction through his examples and seemed to be after something like the distinction between solutions and mixtures in chemistry. In any event, examples of both kinds are found in his various accounts of abduction and scientific method. Both kinds were important to Peirce's understanding of scientific creativity. What is crucial is that both grades exhibit a relation to the past while getting beyond

the premisses: rearrangement understands old ideas in new ways and new concepts result as explanations of what is already known. In either case there is novelty of explanation; for Peirce, new ideas came out of old ideas through abduction. Psychologically, Peirce accounted for the grades of novelty by use of the imagination. The imagination, he argued, as a faculty, looks to the future, whereas memory looks to the past and perception, the present (2.148). However, the scientific imagination is not entirely free. In talking of Kepler's work, Peirce described the scientific imagination:

> What kind of imagination is required to form a mental diagram of a complicated state of facts? Not that poet-imagination that 'bodies forth the forms of things unknown,' but a docile imagination, quick to take Dame Nature's hints. The poet-imagination riots in ornaments and accessories; a Keppler's [sic] makes the clothing and the flesh drop off, and the apparition of the naked skeleton of truth to stand revealed before him (MS. 1284, pp. 12-13).

The point Peirce sought was that scientific hypotheses (and therefore scientific creations), though created, are limited in their attempt to explain reality. They are not free to roam from reality's side; nor, from Peirce's perspective, should they want to. Thus, though an idea may be new, the reality, as a law or element which it discovers, need not be new. For Peirce, gravity probably existed, or was real, long before Newton came on the scene. The law itself is old; its idea or concept is new. Peirce put it this way: "A hypothesis presents such an ideal state of things [which deduction may relate to], and asserts that it is the icon, or analogue of an experience" (7.205). It is this very point of course which leads us to call scientific reasoning "discovery." On the one hand, in the "special, or idioscopic, sciences, research either consists in, or springs out of, the discovery of novel phenomena" (MS. 280, p. 1). This is discovery in the rudimentary sense: discovery which presents abduction with its problems. On the other hand, through abduction, out of a discovery, the "next step

will naturally be to formulate its laws" (MS. 280, p. 1). In other words, in creative abduction, we are attempting to explain anomalous facts by creatively hypothesizing what is really behind them. Science is interested, Peirce said, only in reaching the truth; in shaping reason to the facts of experience. The notion of novelty as it here relates to discovery establishes an important opposition to Peirce's description of what artists do, and we shall take this up in the next chapter.

Let me conclude this section with a summary of my description of Peircean abduction. First, abduction is the necessary condition of scientific creativity; it is the only source of new ideas. Science begins with observation of the facts of perception. When we run into a fact which does not fit our expectations or which in some way surprises us, we must try to explain it. Explanation begins in abduction. Abduction is a lived process which has a logical form, may be insightful, and is under self-control. Thus, we address the problem in a prepared state and let the ideas suggest an explanation. We do not "force" abduction; that is a misleading notion of self-control. Rather, we control by being open to the ideas as well as to the perceptual facts themselves. In creative abductions the hypotheses involved will be original in the sense of being for the first time distinguished and will be novel in one of the two ways we described. We can describe the process psychologically by way of imagination and through the idea of a guessing instinct. The result of an abduction is a "dis-covered" hypothesis (or hypotheses) which is "presumed" to explain the anomaly at hand.

Deduction and Induction

I have described Peirce's view of abduction at length and now move to comparatively brief accounts of the other two stages of

scientific inquiry. The reason for the emphasis is that abduction is the most crucial stage for creative science (See 5.172). Therefore, abduction is also crucial for my analogy to artistic creativity. Still, scientific creativity cannot end in abduction; the exposition of creativity depends on the carrying out of the entire process of inquiry. Stopping in abduction would be, for Peirce, tantamount to God's ending His creative act with the creation of mere potentiality. Thus, in the scientific process a created hypothesis must be defined and made clear and it must be examined to see if it bears out its initial promise. If this is not done, on Peirce's view, then the hypothesis fails as scientific creativity in spite of any originality or novelty it might hold. Therefore, we must briefly examine the completing processes of deduction and induction.

Peirce describes the process of inquiry as follows:

> Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis (5.172, see also 5.161, 5.145, 5.90).

Deduction, then, as a stage of inquiry, begins with a hypothesis and makes it precise by giving it a pragmatic definition. In other words, if I have a situation or context of facts and I add to it my hypothesis, deduction can tell me what the hypothesis means by demonstrating its various necessary consequences. As Peirce said, "the first thing that will be done, as soon as a hypothesis has been adopted, will be to trace out its necessary and probable experiential consequences. This step is *deduction*" (7.203). Thus, let k be our funded beliefs about the state of the universe; let H be our hypothesis; and let x be a problem we hope to solve. Then, "If k and H, then x." But also,"If k and H, then y and z." While our hypothesis explains our problem, it will also entail a number of other conclusions when conjoined with our system of beliefs already in effect. Therefore, y and z, as we deduce them, determine the

pragmaticistic meaning, as effects, of the hypothesis H. In this way deduction is formally explicative.

In addition, in explicating a hypothesis, deduction can also make an indefinite idea more precise. "Gravity," for example, is at first indefinite; as *gravitas*, it is a sort of analogical suggestion. Newton precides "gravity" by determining its practical effects such as the activity of bodies in the universe; even its mathematical precision can be enhanced in this manner. Another good example of preciding is Peirce's own development of the notion of abduction. In 1868 he began with a vague idea that hypotheses may be explainable. This he called abduction. At first, what "abduction" meant was not entirely clear. As Peirce began to deduce the consequences of his theory--for example, that scientific reasoners control hypothesis selection--he became able to distinguish abduction from certain types of induction. Thus, the explication helped render an indefinite idea precise.

Peirce developed several kinds of deduction involved in the deductive stage of inquiry (2.267). However, these distinctions are not important for our concern with artistic creativity, because the formal necessity of deduction is not parallelled in artistic creativity. What is important for our concerns is the preciding function which deduction performs.

The final stage of inquiry is induction. Here we are likewise interested not so much in the various logical forms as we are in the general method of induction and its role in the process of scientific inquiry [51].

> The Deductions which we base upon the hypothesis which has resulted from Abduction produce conditional predictions concerning our future experience. That is to say, we infer by Deduction that if the hypothesis be true, any future phenomena of certain descriptions must present such and such characters. We now institute a course of quasi-experimentation in order to bring these predictions to the test, and thus to form our final estimate of the value of the hypothesis, and this whole proceeding I term Induction (7.115, n. 27) [52].

Induction, then, is the final testing of the created hypothesis. It mediates between abduction and deduction by testing the "must be" of what "may be" against "what is." It is only after induction that we can attach any significant value to a hypothesis. This is why scientific creativity cannot end with either abduction or deduction. And the value lies primarily in the non-refutation of a hypothesis's conclusions and secondarily in the actual occurrence of predicted conclusions under specified conditions. It is perhaps here that Peirce and Popper see most closely eye to eye.

One upshot of the inductive stage of inquiry is that the value we attach to hypotheses is always probable. This is because we cannot complete inductive experiments on all possible consequents of any particular hypothesis. This also means of course that scientific creativity is never complete--every hypothesis, including those that are essentially correct, are open to further modification and interpretation; in fact, they are open to refutation. However, this need not detract from the creative role hypotheses play in the history of science. While Ptolemaic theory became obsolete, it played a critical role in our understanding of the universe and laid the foundations for the Copernican turn. On the positive side, the incompleteness of the process means that a hypothesis may grow in certain new directions as new deductions are tested. It is in this way that science grows through induction.

So far as these two modes of scientific reasoning are concerned, then, creativity cannot end in abduction. Induction and deduction finish what abduction begins. However, since the logical aspects of these stages of inquiry cannot be carried over directly to artistic creativity, we are mostly concerned with their general purposes in the overall process; thus the need to summarize them here. For the creative advances in inquiry and in art we must investigate abduction most closely. Let us, then, make the turn to artistic creativity. It is a turn which seems warranted when Peirce's system is viewed comprehensively.

Chapter 3
ART AND SCIENCE

> But the highest kind of synthesis is what the mind is compelled to make neither by the inward attractions of the feelings or representations themselves, nor by a transcendental force of necessity, but in the interest of the synthesizing 'I think' itself; and this it does by introducing an idea not contained in the data, which gives connections which they would not otherwise have had. This kind of synthesis has not been duly considered. The work of the poet or novelist is not so utterly different from that of the scientific man (1.383).

Artistic Creativity

We must now turn to the second analogue of my first analogy: artistic creativity. I shall try to show why and how artistic creativity is both similar to and different from scientific creativity within Peirce's architectonic. In the end, the difference will hinge on the opposed final looks each takes; that is, whereas scientific creativity, in depending on analogy, ends as discovery, artistic creativity, in being self-representative like an iconic metaphor, ends as creation. Initially, however, I must suggest why I think Peirce's system allows the analogy at all. In other words, I must justify making the turn to artistic creativity which Peirce himself did not make outright. To do this, I shall begin with an examination of the categoriology and then a brief analysis of esthetics as a normative science.

The categoriology involved in the transition from scientific

inquiry to artistic creativity at first seems thoroughly confusing. Nevertheless, it is crucial to examine it, because it lets us know where the two processes stand in relation to each other within Peirce's system. It runs as follows. Thought or reasoning, as we saw, is primarily thirdness. The modes of reasoning are ancillary: abduction is a first of a third, deduction is a third of a third, and induction is a second of a third. Now, Peirce argued that artists "seem to reason little and very simply," so we can place their work under reasoning only hesitantly (MS. 604, p. 1). Indeed, as C.M. Smith holds, the esthetic experience involved with artistic creativity might not be considered reasoning from a Peircean perspective: "As it does not involve any ordinary 'thinking', it has a felt immediacy which differentiates it from other kinds of experience" [1]. Nevertheless, because artists must work with signs, they employ thought, and therefore, for Peirce, minimal reasoning (See MS. 439, p. 8). Thus, we get another division of the categories; that is, we must divided reasoning not only into the modes or stages of scientific inquiry as outlined above but also into basic types--what Peirce called "ways of life" (1.43). These are: the scientific, the practical, and the artistic. Now, since the way of the scientific man breaks down into three stages or modes, it is not implausible to suppose that on Peirce's view the way of the artist would do likewise. We might be tempted to argue that the artistic way of life, in being a first of a third, is monadic rather than triadic. However, all reasoning, even minimal reasoning, must involve thirdness. Therefore, the artistic way should be triadic, although relative to the way of science its modes ought to be in some way degenerate. Therefore, by analogy I propose the following division: artistic abduction, artistic deduction (clarification, precision), and artistic induction (testing). Thus, artistic abduction turns out to be a first of a first of a third, whereas scientific abduction is the first of a third of a third (abduction--logic--reasoning). Following the synechistic bent of Peirce's thought, this establishes a continuity between creativity in science and creativity in art. Thus, we can take this brief analysis as the starting point for our turn to the discussion of Peirce's

notion of artistic creativity.

In conjunction with this broad categoriology, we must examine a specific part of it in more detail. When I began, I argued that a void was generated in Peirce's esthetics because he did not consider the activity of the artist. Through logic as a normative science he described how scientists ought to work to advance knowledge. Thus, we must see what role esthetics plays as a normative science. It seems easiest to argue simply that esthetics is the first and most necessary of the normative sciences in that it provides a focus on the admirable *per se* upon which ethics and logic depend [2]. Indeed, this is what Peirce argued and from a scientist's point of view this seems to be all there is to the matter. However, since esthetics is prescindable from logic, it has its own corresponding "way of life" just as normative logic corresponds with the scientific way of life (5.36). This, as we saw above, is the artistic life. Thus, esthetics can be viewed from an artist's perspective which itself is not dependent on the point of view of the logician or scientist. It is this way of regarding esthetics, in an artistic sense, which Peirce had difficulty adopting. Nevertheless, such a view not only maintains the standard role of esthetics but it broadens the understanding and deepens the importance of esthetics within Peirce's architectonic. I do not mean to attack Peirce here in order to make my own case for his view of art. Rather, this is one instance in which he admitted his own ignorance; therefore, any account of what his view would be must move beyond his explicit statements in order to solve the aporia with which he left us.

In 1903, after he admitted the importance of esthetics, Peirce still argued "that esthetics is no more essentially normative than any nomological science" (1.575). Peirce's problem, stemming from his inability to leave the logician's perspective, was that he developed in detail only the foundational aspect of esthetics in which it is normative for logicians and scientists. "As to that," Peirce argued, "the logician may be exempted from inquiring whether the beautiful is distinct or not . . ." (1.575) [3]. So far as he went, then, Peirce was consistent in maintaining that esthetics is

normative primarily in a foundational sense because it points out the admirable *per se* for ethics and logic.

However, from the perspective of Peirce's theism, as we shall examine more closely later, esthetics functions in a dual fashion: foundationally and artistically. The esthetic ideal--the beautiful or the *kalos*--is part of what determines the *summum bonum* or the growth of concrete reasonableness for Peirce's God. However, Peirce pointed out, the "*summum bonum*" is the ultimate aim of esthetics, "if esthetics is not to be confined to sensuous beauty . . ." (MS. 1334, p. 38). Therefore, the complete *summum bonum* involves not only an artistic component but also the normative ideals of ethics and logic which depend upon it. This is precisely why Peirce defined the *summum bonum* through "reason" as the broadest or most encompassing category. Thus, esthetics is artistically controlling insofar as God's creation is a work of art, but at the same time is foundational insofar as the *summum bonum* requires the added ideals of ethics and logic.

If we take this dual function of esthetics in its cosmological role and apply it to finite beings, whom, as we saw above, Peirce categorially distinguished, we find its aspects may be separated to some degree. For example, an artist, as distinct from a logician or scientist, may be interested in the artistic function of an esthetic ideal without simultaneously being concerned with esthetics' foundational capacity for logic. Peirce clearly pointed to this in his various descriptions of artists as being poor reasoners or as being essentially interested in firstness and feeling. Thus, an artist may seek to create what is admirable in itself just as a scientist seeks to understand what is true. Even if we do not wish to exclude artists from the realm of reasoners, the distinction is significant as one of empahsis.

If we use Peirce's claim that logic is normative for science as an analogy, we see the same issue from another angle. Viewed externally through the classification of the sciences, logic was for Peirce simply a specific categorizable branch of science. However, when viewed in itself, or internally, logic was the way a scientist ought to carry out his work. The same distinction can be made for

esthetics. Viewed in the architectonic of sciences, it is categorizable as the first normative science upon which the other two are dependent. At the same time, viewed internally, esthetics is the way an artist ought to pursue his work. And it is this latter, internal view which I am concerned to explore throughout. Of course this does not mean I can ignore the foundational role of esthetics for it is fundamentally related to the artistic role; rather, I shall rely on it as a tool for explicating the artistic role.

This, then, frames my approach to Peirce's esthetics in general and to the artistic corner of esthetics in particular. Esthetics was for Peirce one of the three normative sciences. C.M. Smith aptly describes Peirce's esthetics when he says that though it is "indispensable to both logic and ethics, it is also the more undeveloped and rudimentary" [4]. Peirce's understanding of esthetics is precisely the inverse of Aristotle's description of metaphysics in relation to other sciences: that is, esthetics is the least important but most necessary of the normative sciences. This indeed was Peirce's standard understanding of the interdependence of the categories regardless of their particular mode. Again, I shall be examining the undeveloped elements within this larger categorial role, for in dealing with what is "objectively admirable without any ulterior reason" (1.19), with "objects simply in their presentation" (5.36), and with "things whose ends are to embody qualities of feeling" (5.129), Peircean esthetics is at least in part a philosophy of art.

While I believe my interpretation is not fundamentally in disagreement with the traditional understanding of Peirce's esthetics, there is at least one thinker who would deny some of my claims. Beverley Kent argues that "Although the normative sciences are analysed in terms of the three categories, it would be misleading to regard esthetics as a first, ethics as a second, and logic as a third *per se*, as many commentators have attempted to do, thereby attributing to Peirce the view that esthetics studies feelings, ethics studies action, and logic studies thought" [5]. Instead, she holds, "all three normative sciences must be seen as seconds of philosophy" [6]. The latter claim is insightful insofar as

the normative sciences deal with activity under self-control, but the first claim does not hold. The two positions are not mutually exclusive. First, Peirce himself saw the three normative sciences as emphasizing particular aspects of consciousness: "esthetics considers those things whose ends are to embody qualities of feeling, ethics those things whose ends lie in action, and logic those things whose end is to represent something" (5.129). This quotation from 1903 marks the beginning of Peirce's mature view of the normative sciences and cannot be disregarded on historical grounds [7]. Therefore, the commentators who maintain this view cannot be held to be misleading. Moreover, Kent herself points out that "Normative logic (in contrast to formal logic which Peirce consigns to mathematics) is the science of deliberate thought" [8]. What she fails to see is that ethics is the science of deliberate conduct and esthetics, of deliberate feeling, as I have tried to show. This does not mean that esthetics does not play a foundational role for ethics and logic; Peirce clearly argued that it does. It merely indicates that esthetics, taken by itself, also provides a normative account of artistic creativity. It is a philosophical endeavor, not a "how to" description of art--just as normative logic, while describing what scientific method ought to be like, is not an introduction to laboratory procedure. In short, I see no problem in viewing Peircean esthetics as reasoning both about what is admirable in itself and about how one ought to approach what is admirable in itself.

In making this analogy between normative logic and esthetics, one issue must be examined at the outset: that is, the concern for how scientific reasoning and art are really similar as modes of conscious thought. If I cannot make sense of this connection, the analogy cannot begin. Of course, the answer appears simple: we know that art involves conscious thought and effort, therefore it ought to be like scientific reasoning in some manner. Peirce recognized this as well, but there are problems involved. Peirce argued in 1903 that "every true poem is an argument" (MS. 309, p. 50). His claim was not purely metaphorical; he did think that works of art were arguments in some sense. In saying this we must

keep in mind Peirce's distinction between arguments and argumentations. Arguments are anything that lead to a state of belief and argumentations are arguments that lead from known premisses to necessary conclusions. The question, then, is, in what sense are works of art arguments? Since artists, as observed above, reason little and very simply, their work is distinct from scientific reasoning. Therefore, their work, as arguments, will not have a logical form which was the mark of science for Peirce. But if a work of art has no logical form, in what formal sense can we talk about it? This is the problem I must address and I preface my attempt to do so with another of Peirce's descriptions of artists which exemplifies the difficulty of the issue; there are those, Peirce said,

> for whose thought, if it can be called thought, Firstness has a relative predominance. It is not that they are particularly given to hypothetic inference, though it is true that they are so given; but that all their conceptions are relatively detached and sensuous (MS. 439, p. 8).

A work of art, like a scientific argument, is an argument insofar as it leads to a state of belief or satisfaction of doubt--it fills a vacancy. And this is all that any argument, on Peirce's view, need do. However, whereas scientific reasoning ends with reasonable ideas, art ends with reasonable feelings. When we observe a good work of art, we have:

> a sort of intellectual sympathy, a sense that there is a Feeling that one can comprehend, a reasonable Feeling. I do not succeed in saying exactly what it is, but it is a consciousness belonging to the category of Representation, though representing something in the Category of Quality of Feeling (5.113).

In being a first of a third, artistic creativity is reasoning which emphasizes feeling. Still, it remains reasoning because it is semiotic--because it is in "the category of Representation." Art,

then, involves arguments of feelings. Peirce said of artists: "It is truly surprising how accurate their judgments are when they are not warped; but there seems to be nothing but their usual good feeling to prevent their being warped" (MS. 604, p. 1). Our analogy, then, must develop how these "arguments of feeling" run parallel to the arguments of normative logic we examined in the previous chapter.

In this connection, let us look at the idea of form. We saw that inferential reasoning had form in two senses: 1)it had logical form involving premisses and conclusions, and 2) it had methodological form outlined by the three modes of inquiry. As we saw above, art does not have logical forms, because these are unique to logic. Moreover, the difference in content of the arguments of the two sciences suggests that logical form would not be appropriate to esthetics. A scientist is interested in perceptual facts as sources of cognitive information which can be logically ordered, whereas an artist sees them as sources of qualities of feeling. Peirce emphasized this point when he gave a categoriological division of rhetoric in which the first element was "a rhetoric of fine arts, where the matter is of feeling mainly" and the third was "a rhetoric of science, where the matter is of knowledge" (MS. 774, p. 13).

Since art is not susceptible to logical analysis, we must turn to the second type of form: methodological form. If the two normative sciences are to be parallel in some formal sense, as I have suggested they ought to be, it must be by way of methodological form. Thus, it is at least plausible to suppose that there might be methodological forms of esthetics similar to the three found in normative logic. On this point there is no definite evidence either in support or in denial of my suggestion. However, two points concerning the structure of Peirce's system as a whole ought to be considered: 1) the uniform and continuous application of successful ideas throughout the system, and 2) the ubiquity of the categories within the system. First, whenever Peirce had what he understood to be an important idea for a certain part of his system, his habit was to apply that idea to related topics in uniform fashion. For

example, when Peirce found synechism effective in understanding mind as open to the future, he applied it as well to the universe as a whole (6.169-173, 1.170-175). Or, when he discovered that pragmaticism helped make sense of the problem of meaning, he applied it to other areas of his thought in relevantly different ways [9]. If we take this habit of uniform application of ideas together with the clear fact that the categories pervade all parts of Peirce's work, the plausibility of my claim is strengthened. For Peirce, normative logic included three modes of reasoning--abduction, induction, and deduction. Since this division was successful at this level, it is reasonable to apply it to esthetics as well, particularly since it reflects the importance of the categories. Although the relation of the division into modes of reasoning to esthetics must reflect the relevant differences between esthetics and logic, it is still a reasonable move within the context of Peirce's systematic venture. Thus, I am led from another direction to the claim I derived from Peirce's categoriology at the outset of this chapter: that is, that esthetics, as normative, provides us with three modes or stages of artistic activity. These are: artistic abduction, artistic deduction, and artistic induction.

Artistic Abduction

Art, then, begins with artistic abduction. Just as with scientific abduction, this must be under the self-control of the artist in order to be understood as a reasoning process. What constitutes this control? It is not the control of the ideas or reasons as in abduction proper, but the rational--that is, by way of thinking--control of feelings which according to Peirce were the firsts of consciousness. Artistic abduction is a thought process which emphasizes firstness through its own thirdness.

Whereas scientific abduction begins with an anomaly or

surprising fact, such seems not to be the case for art. Art does not establish theories which expect things to happen. However, it is still possible for artists to be in an unsettled state by way of an unsettling feeling of somekind. In some sense, for an artist the world does not feel as it should--something is missing--and this is the inception of creativity. This, of course, is a psychological description parallelling Peirce's account of the beginning of science; it is not a normative proposition (See 5.372). Nevertheless, this is a reasonable approach for Peirce insofar as all thought has psychological origins of some kind. What is normative is the way in which we seek solutions to the origins. Now, an artist does not hypothesize solutions to a conceptual problem; rather, he "hypothesizes" by trying to express the problem--by filling the vacancy. This is how he overcomes his unsettled feeling. The essential difference is that artists do not perform representation proper, but a second degree degenerate case which Peirce calls "embodiment:" again, "esthetics considers those things whose ends are to embody qualities of feeling" and logic "those things whose end is to represent something" (5.129). So, the categoriological emphases of art and science play an important role in distinguishing them as processes in the initial stage. Thus, an artist's abduction does not involve so much letting "ideas" suggest themselves, as letting feelings arise [10].

One similarity between science and art is that artistic abduction does share the two forms of freedom displayed in abduction proper. An artist is actively and passively free in using his talents of imagination and observation. Indeed, as Peirce argued: "And let me tell the scientific men that artists are much finer and more accurate observers than they are, except of the special minutiae that the scientific man is looking for" (1.315). From the side of observation, an artist is free by openning himself, together with his funded experience, to the firstness of perceptions. Much like scientific abduction, artistic abduction begins in the free play of ideas and is in part "a surrender to the insistence of an idea" (MS. 442, p. 2).

From the other side, the side of the artist as agent, there is

freedom in imagination. An artist allows his observations of the qualities of feelings free play in his own imagination. The difference here--and it is important--is that an artist is not bound by existence or reality; his imagination has much greater play than that of a scientist. Peirce said, "among artists I have known more than one case of downright hallucinatory imagination at the beck and call of these *poetai*" (5.117). In making art the first of conscious activity, Peirce makes it exemplify the characteristics of firstness; thus, it has the highest degree of freedom.

Artistic abduction therefore comes out of the observation of qualities of feeling in perceptual facts and gives these qualities free play in imagination. The result, in truly creative instances, is a new quality of feeling which tentatively settles the artist's unsettled feeling--the nature of the elemental quality, as possibly satisfactory, corresponds to that of a hypothesis.

Although we have a general description here, much is lacking. First, we want to know what, if anything, is behind an artist's control of his creativity. Secondly, we need to know more about the specific look that the method of artistic abduction takes. Both of these problems I want to address in later chapters when more specific evidence will have been uncovered through the analogy with God's creativity. We do not yet have enough to go on to get beyond this initial outline of artistic abduction.

For now, I want to deal with two other problems. The first of these is the problem of the intermingling of ideas and feelings in artistic abduction. Just above I have tried to suggest why, according to Peirce's system, this intermingling occurs (See also, n. 10). Still, I shall clarify this further. The second problem is that of what artistic abduction leads to. As an upshot of the intermingling and the freedom of artistic imagination, we see that the end of artistic creativity need not be "dis-covery" as it is for scientific inquiry. To examine these two issues in detail, we must take an excursion into the labyrinth of Peirce's semiotic.

The intermingling of feelings and ideas is a necessary consequence of Peirce's system. As Peirce maintained:

> although a feeling is immediate consciousness, that is, is whatever of consciousness there may be that is immediately present, yet there is no consciousness in it because it is instantaneous. For we have seen already that feeling is nothing but a quality, and a quality is not conscious: it is a mere possiblity (1.310).

The problem of course is like T.S. Eliot's attempt to catch the "still point" in *Four Quartets* [11]. In order to talk about feeling, or a quality of feeling, which is what art does, we must go beyond it. Thus, art is not the result of pure emoting. Rather, art is a semiotic interpretation, or better, presentation, of qualities of feeling. Therefore, it must involve signs or ideas; and in involving signs, it must involve minimal reasoning. This is why works of art turn out to be "reasonable feelings" for which esthetic contemplation involves an intellectual sympathy. In controlling ideas about feelings, an artist is at the limit of self-controlled consciousness--the firstness of a creative process.

Since, then, artistic abduction is a semiotic process, as is scientific inquiry, it will help us get a better grasp of it if we look at it through Peirce's semiotic. Indeed, it was in his discussions of semiosis that Peirce most often referred to art. The first task is to take a brief look at what a work of art is in Peirce's system. However, much work has already been done in this area and I undertake the detour only as a way of showing what artistic abduction, and therefore artistic creativity, seeks [12]. This description of the "purpose" of art will help illustrate a crucial difference between scientific and artistic creativity. Once this has been done, we can move on to examine the other two methodological stages of artistic creativity.

Evidence in the Semiotic

First, then, we must see that, for Peirce, works of art were signs. In embodying feelings, an artist is making a sign of his ideas. Peirce said: "The performance of a piece of concerted music is a sign. It conveys and is intended to convey the composer's musical ideas; but these usually consist merely in a series of feelings" (5.475). In dividing signs according to how they stand for their objects, Peirce arrived at three types: icon, index, and symbol. Art in its firstness is most intimately related to icons. This is especially so since, as Hocutt says, "the icon is the only kind of sign suited to convey feelings" [13]. In Peirce's words, "if the element of cognition to be conveyed is an unanalysed abstract idea, or feeling, the only way is to present an icon, that is, a copy or exemplar of it" (MS. 16, p. 12). In general, then, on Peirce's scheme, an artist attends to his feelings and then presents a quality of feeling which seems to him to be of value in the form of an iconic sign.

It would be easy, and not entirely misleading, to end the description of the role of icons in artistic abduction at this point. It allows for the similarity of method in art and science in an agent's partially controlled openness to ideas--the controlled subjection to "insistent" suggestions. At the same time, it accounts for a primary difference. Art, in dealing with feelings, works primarily through icons, and science, in its concern with logical ideas and laws, deals with symbols mainly. However, Peirce divided iconic signs into three modes as well and I believe this distinction, though never fully examined in this regard, provides further insight into the distinction between art and science.

The use of "iconic sign" here is important, for "most strictly speaking, even an idea, except in the sense of a possibility, or Firstness, cannot be an Icon" (2.276). For Peirce, a pure icon was a pure first and was not anything existent or in relation; therefore, a sign could not be a pure icon. Instead, we have iconic signs or symbols which emphasize their iconicity: "If a substantive be wanted, an iconic representamen may be termed a hypoicon" (2.276). And, Peirce added, "Hypoicons may be roughly divided according to the mode of Firstness of which they partake" (2.277).

Smith questions the appropriateness of this division: "The

problem here is that hypoicons are classified according to *mode of firstness*, which flatly contradicts Peirce's assertion elsewhere (5.68) that category the first is too rudimentary to be broken down or modified" [14]. This looks like a problem until we examine the situation more closely. At 5.68 Peirce was talking about the category in its purity. However, hypoicons, as we just saw, are not pure firsts. They are degenerate thirds which emphasize firstness. And a degenerate third, Peirce argued, we "may subdivide, and its species even be governed by the three categories, but it will not subdivide in the manner which we are considering, by the essential determinations of its conception" (5.72). That is, any third (case of thirdness) can be divided into three elements by way of the categories: first, second, and third. Every third involves all three elements (1.530). Hypoicons, while capable of categorial subdivision, in being degenerate thirds, cannot be divided into essential elements. The three species--image, diagram, and metaphor--are not essential elements of every hypoicon, but are possible elements only. Thus, we see that the division was a legitimate one for Peirce and did not involve a serious inconsistency in his thought, although to be sure it was a kind of subdivision he did not often make.

The full division of hypoicons runs as follows:

> Those which partake of simple qualities, of First Firstnesses, are *images*; those which represent the relations, mainly dyadic, or so regarded, of the parts of one thing by analogous relations in their own parts, are *diagrams*; those which represent the representative character of a representamen by representing a parallelism in something else, are *metaphors* (2.277).

Now, within a work of art an artist may employ all three types of hypoicons. He may use an image in the case of simple qualitative representation of an existent or a thought-picture. He may use a diagram or analogy, for example, when a musical rhythm parallels some existent rhythm. And he may use a metaphor to create a new relation as when Emerson wrote:

> The hand that sounded Peter's dome. And framed the aisles of Christian Rome. Wrought in a sad sincerity. Himself from God he could not free. He builded them better than he knew. The conscious stone to beauty grew.

Here there is a new relation between a work of architecture and felt feelings, and as Peirce said, "The man is deranged who after reading those lines can ever again use the word *wrought* without reverential associations" (MS. 1254).

It seems that scientists too may employ all three modes of iconic sign. They may use images in any pictorial designation of a hypothesis. They use analogies both in visual diagrams and in mathematical formulae (2.279). And lastly, they appear to use metaphors sometimes in presenting new hypotheses; that is, they use metaphors to describe their new ideas [15]. What, then, is the distinction between art and science which lies in this division of hypoicons? The distinction, I suggest, lies not in the use of these modes, but in the relation of these modes to the basic purposes of the two types of reasoning we are here examining. Scientific inquiry has for its goal a hypothesis which is iconic in being analogous (diagrammatical) to the existent world. Artistic creativity, on the other hand, has for its goal the presentation of a new quality of feeling which is metaphorical in nature, if not itself a metaphor in the narrow sense of a new quality bridging the relation of two or more ideas.

To present my claim. I must first try to make clear what Peirce meant by "metaphor." As Smith argues, "just what it means that they [metaphors] 'represent the representative character of a representamen by representing a parallelism in something else' is almost impossible to say" [16].

Metaphors, for Peirce, as we saw, were iconic signs. Moreover, they were in some way different from diagrams or analogies; Peirce clearly separated the two at both 2.277 and 2.222. If anything, the comparisons in these paragraphs suggest that

analogies are a special case of metaphor in which the resembling character is univocal rather than equivocal (especially 2.277). That is, in an analogy there are three things: the two relata and the identical form which they share. Thus, for example, an accurate road map shares a form with some particular territory. Or, a fullback is like a truck in having an ability to run over things. When Peirce argued for the dyadicness of analogy at 2.277, he did so on the ground that two things were alike in one respect. In a metaphor, however, there seem to be four things: the two relata and the different quality sets of each. When Peirce held metaphors to be thirds, he suggested the presence of a third thing which tied together the quality sets of the relata. But he did not tell us what the third thing is. Unfortunately, there is not enough to go on in this one instance; it is suggestive but not conclusive.

Still, Peirce was at least clear in subsuming metaphors, together with analogies and images, under the class of icons. Our distinction above between pure icons and iconic signs or hypoicons is important here. "An *iconic* sign," as Joseph Ransdell aptly puts it, "is anything whatever which does or can function as a sign in virtue of some icon proper" [17]. Metaphors, then, because they are articulated and do carry some meaning, are no less symbolic in a fundamental sense than any other sign; rather, a metaphor is a symbol whose iconicity dominates. As Peirce argued: "One sign frequently involves all three modes of representation; and if the iconic element is altogether predominant in a sign, it will answer most purposes to call it an icon" (MS. 491, p. 3). Thus, metaphors may be both indexical and symbolic, but these functions are overshadowed. What, then, is the nature of a metaphor's iconic representation?

Here, I think, lies the most difficult point to establish as a result of Peirce's brevity. There are hints, but no explicit discussion of the topic. For an inroad into the problem let us look at Smith's article in which he briefly takes up the issue of how Peircean metaphors might work. Smith's discussion lends itself to two conflicting interpretations. In examining these, I shall lead into my own understanding of Peirce's conception of metaphor. On

the one hand, Smith appears to conflate Peirce's conceptions of metaphor and analogy by grounding both on isomorphic relations. Understood in another way, however, his argument suggests a crucial difference between the two. The first of these interpretations I want to reject and the second I want to accept as Peirce's view of metaphor.

Smith begins by attempting to explain Peirce's distinction between diagrams or analogies and metaphors at 2.277. He restates Peirce's claim that an analogy is a similarity between two objects (signs) in the qualitative structure of their parts. This, he says, accounts for the dyadicness of an analogy. A map and its corresponding territory are two relata sharing a common formal structure. A metaphor, on the other hand, is distinguished by its thirdess insofar as there is "one quality mediating between two others," as, for example, "'tension' might be said to mark the relationship of two colors" [18]. But a true metaphor, according to Smith, exists only when such a triad is paralleled by a qualitative relationship in some other medium. Thus, a Peircean metaphor must always be a parallel between a pair of qualitative relations, each of which is a third.

Later, in discussing a portrait, Smith argues as follows: "Finally, it may be noted how the qualities of lines and brush-strokes combine to create an effect of crudeness which can be taken to stand for, or be parallelled by, a lack of refinement in the character portrayed. The painting would have become a metaphor" [19]. In this example Smith makes the lines and brush-strokes resemble the portrayed character through the quality of crudeness. It is on this ground that he holds it to be a metaphor.

From this description and example we might argue, on the one hand, that Smith has reduced Peircean metaphors to the status of analogy. This follows if we understand Smith to be saying that there is a quality, crudeness, which the lines and the brush-strokes share *univocally* with the portrayed character. On this view, the parts of the painting are isomorphic with the traits of the portrayed; that is, the lines are like the character in respect of crudeness. In this case, the important relation for metaphor is

simply the dyadic relation of analogy. Smith's argument, understood in this way, is merely a special case of Ransdell's broader claim that all iconic representations "have a fromal identity" or are "isomorphic" with some object [20].

However, Smith may not be arguing for the univocity of "crudeness" (or "tension" in the earlier example) at all. That is, his use of "crudeness" in the example may itself be metaphorical--under another conception of what it means to be metaphorical. This view, I think, makes better sense of both Smith and Peirce. First, it accounts for the distinction both make between analogy and metaphor. Secondly, it accounts for the claim that a metaphor's parallelism is "in something else" or in some "other medium" [21]. That is, the parallelism of a metaphor, in being between "other" mediums, is between things which are not, or cannot be, isomorphically related. Therefore, they must create their own similarity or identity [22]. On this reading, Smith can be seen as rejecting those claims for iconic representation which implictly reduce Peircean metaphor to analogy by arguing that all iconic representation is isomorphic in nature. Since it is this understanding of Smith I wish to uphold as the correct understanding of Peirce, and since Smith does not develop his view, let me pursue my own argument at this point.

To see how metaphors might be different from diagrammatic analogies for Peirce, let us begin with some examples. "The golf ball smiles," can be said to hold an isomorphism, if the golf ball (object) has a slash in it whose form is that of a smile. So, with "swan dive;" the dive shares the form of a swan with wings extended. These are analogies. However, "the field smiles," unless the field has a curved furrow in it, does not clearly show an isomorphism between the qualities of the field and the qualities of the smile. Peirce, indeed, since for him all icons were likenesses, must have held that a similarity exists between a metaphorical term and its icon, but he never precisely told us what or, perhaps more importantly, where it is. He only suggested that it is not the same as in the case of analogy and this suggested that the similarity is peculiar. Although there may be both self- and other-

representation in a metaphor, these are not based on an implicit isomorphism.

We need, then, to find another ground for the representation of metaphorical icons. And in doing so we must be careful where we look for the needed likeness; in analogies we look between the two analogues, but it does not follow that in metaphors we must look between the terms or constituents. In MS. 491 Peirce maintained that an icon's "representative force depends solely upon characters which it possesses *materialiter* and which it might equally possess though its object had no existence." Now, the material implications of a picture, map, or analogue are clear as image and diagram or analogy; in their representative function they exhibit or possess what they represent as iconic. However, the materiality of a metaphor is not clear. It is unlikely that we mean that "smile" represents something in the referent of "field" in virtue of its lettering (that is, as a token), for not only are the two different but what similarity there is cannot possibly clear "the field smiles" from the charge of nonsensicalness. But can we mean that the phenomenon of smiling has qualities found in some field? In one sense, as I shall try to explain, the answer is, yes; but not in the sense that the qualities were already there or that they are describable apart from the metaphor.

I suggest that the materiality of the metaphor ("the field smiles" or "the smiling field") is a feeling, a first, a pure icon which its creator perceives. The iconicity of the metaphor lies neither in "field" nor in "smile," but in the unity of the two: a third thing which they somehow constitute. Thus, the ground of a metaphor is what may be called an "isosensism" between a metaphor and its icon which is created by its author. Moreover, what resemblance obtains between the constituents of a metaphor is created in the articulation of the metaphor. Unlike analogical isomorphisms, metaphorical resemblances are not traceable to antecedent links. Indeed, as Peirce maintained, it is the poet who is interested in what is antecedentless and spontaneous: "the diversities are usually of small use to us scientists, and attract the attention of poets mainly . . ." (6.100). Therefore, a metaphor, like an image or

an analogy, is what it represents--but not because of an antecedent identity or similarity, not as a reminiscence, but in virtue of a similarity which it creates [23]. In this way metaphors are made distinct from other icons while they maintain the necessary condition of iconic representation. The results of this thesis are several, particularly as regards the relation of the constituents (e.g., field and smile) to each other and to the metaphor as a whole. These I shall try to develop below. But first more needs to be said about what it is that is created in the isosensism.

The suggestion that the materiality of a creative metaphor is its "feel" is consistent with another of Peirce's claims. In discussing self-signifying symbols Peirce described the feeling of *deja vu*; what happens in *deja vu* is that we have a feeling which is autonomous while we feel as if it is a resemblance to something antecedent (MS. 517). In other words, a feeling arises which feels appropriate but has no object to which it is appropriate. Thus, it is self-representing: it signifies its own created icon and refers, if at all, to its own created referent. This is relevant to creative metaphors so far as Peirce claimed that iconicity is most emphasized in a symbol which signifies "what it does" and therfore signifies "itself alone" (MS. 517, p. 67.). In our example, then, "the field smiles" is an iconic sign grounded in itself as pure icon (as prearticulated feeling); that is, it is appropriate to itself--there is no antecedent form or quality which it imitates. This view of metaphor provides at least one medium for the self-signifying iconicity which Peirce described. Therefore, whereas in an analogy the constituent terms are related by a single quality or finite set of qualities, in a metaphor they are related only by a similarity which they create in their conjunction.

This distinction between types of signs allows us to project a distinction between science and art. Science as we saw is diagrammatical or analogical in its reference to a world already in existence. Peirce stated as much on several occasions (1.367, 2.148). Art, on the other hand, is free from such restraint; and its freedom shows up semiotically in a work of art's ability to create its own referent [24]. Now, the implicit conventional connection

between art and metaphor supports this understanding of Peirce's description. More importantly, Peirce's acknowledgement that icons are central for art pushes us in this direction; as I shall argue below, it follows his categoriology. Thus, it is the possibility of a self-representational or metaphorical aspect of artistic creativity which distinguishes it from scientific creativity. Before advancing other support for this claim, let me address one possible criticism of it.

It might be argued that there is a problem here in the categoriology. That is, why should art be related to metaphor which is a third instead of being attached primarily to image which is a first? I think the problem is solvable. First, however, whether I can solve the problem or not, it remains a fact that in most of his uses of metaphor Peirce connected it specifically with art (See, e.g., 2.222, MS. 675) [25]. Accordingly, I think my claim that art is metaphorical is not farfetched from Peirce's perspective. Now, the solution to the problem, if it was such for Peirce, lies in the unique kind of division Peirce made in this instance. As we saw above, it was not a division into essential elements as were Peirce's truly categorial divisions; rather, it is a division into modes of a specific type of degenerate third. I offer the view, then, that instead of following the usual categorial relations, Peirce here presented a hierarchy of hypoicons. Thus, metaphor, in being the third, is the highest form--or most iconic--of iconic signs. Of the three--image, analogy, and metaphor--metaphor has the weakest direct connection with its object. Therefore, since art is preeminently concerned with this type of sign, it is natural for it to be associated with metaphor which is the most perfect form of this type.

While I think the distinction between art and science can be made on this evidence alone, Peirce provided another way of observing this distinction through his later descriptions of the objects and interpretants of signs. In his article, "The Esthetic Sign," J. Jay Zeman introduces the Peircean ideas of immediate object, immediate interpretant, and emotional interpretant, and with references to Dewey's work in esthetics he associates them with Peirce's esthetics [26]. While the comparison with Dewey is, I

think, essentially correct, it is not necessary for the issue at hand. I shall follow Zeman's general outline. However, while he is interested in the esthetic sign itself, our interest in it is only as the culmination of the creative process, as something which distinguishes art and science.

In 1906 Peirce described the object of a sign:

> But it remains to point out that there are usually two objects, and more than two Interpretants. Namely, we have to distinguish the Immediate Object, which is the Object as the Sign itself represents it, and whose Being is thus dependent upon the Representation of it in the Sign, from the Dynamical Object, which is the Reality which by some means contrives to determine the Sign to its Representation (4.536).

Now, what I want to argue is that a work of art, in its essence--not as a re-presentation--need only have an immediate object or, in a weaker claim, is best understood by its relation to its immediate object [27]. A scientific hypothesis, on the other hand, must have both an immediate and a dynamical object. "The Immediate Object," Peirce argued, "of all knowledge and all thought is, in the last analysis, the Percept" (4.539). This squares with what we said earlier concerning the ultimate ground of abduction in both science and art. Now, it seems clear that a scientific hypothesis, as a sign, also needs a dynamical object which is the existential law or thing for which it is the analogue. However, it does not appear that work of art holds the same necessity. It does not seem that a work of art need have any more than an immediate object. Still, more can be said.

Peirce listed one triad of interpretants as follows: immediate, dynamical, and final. Again, we are interested primarily in the immediate interpretant because of its firstness: "it is the interpretant as it is revealed in the right understanding of the Sign itself, and is ordinarily called the *meaning* of the sign" (4.536). So far as we are interested in the meaning of a work of art or any sign, Peirce argued, we must examine a parallel categorial division of

interpretants. This division is into emotional, energetic, and logical interpretants. Once again we follow the call of firstness--as well as Peirce's explicit connection of art and feeling--and look at the emotional interpretant:

> There is almost always a feeling which we come to interpret as evidence that we comprehend the proper effect of a sign, although the foundation of truth in this is frequently very slight. This 'emotional interpretant,' as I call it, may amount to much more than that feeling of recognition; and in some cases, it is the only proper significate effect that the sign produces. Thus, the peformance of a piece of concerted music is a sign. It conveys, and is intended to convey, the composer's musical ideas; but these usually consist merely in a series of feelings (5.475) [28].

Peirce's example here was not, I think, accidental. The point is, as Peirce said quite often, that art is concerned primarily with feeling. But the upshot is that a sign whose *only* significate effect is an intelligible or knowable feeling or series of feelings is not likely to have more than one object. If a work of art had a dynamical object of necessity, as does a scientific hypothesis, it would tend to produce a habit of thought and would thus have a logical interpretant (5.476). On Peirce's view, then, an immediate object is the only kind of object a work of art, as a sign, needs. Moreover, that object depends for its very being upon the sign; as with the musical piece, the sign embodies a feeling or quality of feeling (See also MS. 517). This returns us to the issue at hand; we have described from another perspective the metaphorical or self-representational character of art, for there is no dynamical object to which a work of art need refer. A work of art creates its own referent.

The view I am presenting is defended in part by Hocutt, Kaelin, and Zeman, though they do not refer to the division of hypoicons, nor do they make the connection to scientific creativity [29]. The outcome of this view is that the metaphorical or self-

representational function of art allows for a more radical form of novelty than we find in science. Scientific hypotheses can be original but their corresponding reality is not new; gravitational force, as we suggested earlier, did not begin with Newton according to Peirce. In art, however, not only is the idea original *for us*, but it is novel for the world of existents as well [30]. The only place a work of art could not be original is in the Platonic world of pure firsts. Notice how this corresponds with Peirce's distinction between scientific and poetic imagination. This parallel itself, as suggested above, recommends the distinction by way of analogy and metaphor.

The conclusion I draw from this consideration of Peirce's semiotic is the following. Artistic abduction begins with the goal of presenting a new quality of feeling. This it accomplishes by bringing ideas (especially of feelings) into relation; the interaction of the ideas presents the new quality, thus establishing the metaphorical nature of works of art. They are not reducible or traceable to any analogue already in the world. Rather, they create their own referents and so far as they are representational, they are self-representational. Therefore, while for Peirce both scientists and artists may use various hypoicons in their reasoning, the result of an initial abduction, and its finished counterpart, is for science a form of analogy and for art a form of metaphor.

Artistic Deduction and Induction

Art, like science, cannot end in the abductive stage. It gives us a beginning but no state of satisfaction or belief. Art, in being under human self-control, is fallible. Therefore, we must both explicate and test our tentative artistic creations. Only after these later stages are performed can a work of art be said to be in any sense complete. If this were not the case, Peircean art would be a form

of pure emoting, and this Peirce rejected insofar as he recognized that a work of art presents an intelligible, reasonable feeling. We must examine this further, keeping in mind our distinctions between art and science.

The second stage of artistic creativity is clearly not deduction proper, for there is no formal hypothesis to examine. No law is put forward which might predict certain consequences in the future. However, we can employ the general purpose of the deductive stage of reasoning which I emphasized in the previous chapter: to project future possibilities and, more importantly, to explicate or precide ideas (See 6.471). Here I want to see how these purposes might be understood in artistic creativity.

In science we project necessary consequences which we test in induction: we employ demonstrative techniques. In art, we can project the "necessary" consequences only in relation to a work of art itself, not in relation to an existent and independent world. In other words, an artist projects what his abduction will look like to see if it is what it is supposed to be. Peirce gives the following example:

> Another example of the use of a likeness is the design an artist draws of a statue, pictorial composition, architectural elevation, or piece of decoration, by the contemplation of which he can ascertain whether what he proposes will be beautiful and satisfactory (2.281).

This example illustrates the intimate coordination of preciding and testing in creations of art. The making of a model or mental projection is one method of clarifying a work of art so that it may be tested in esthetic contemplation, just as logical deduction is a means of pragmatically clarifying a scientific hypothesis. It is like deduction proper in that it provides an artist with grounds for continuing in the direction he is heading or for trying something different.

Such methodological projecting is the only formal step in the deductive stage of artistic creativity acknowledged in Peirce's

writings. My second point is therefore one of pure conjecture by analogy. We noticed that there is a sense in which abductive hypotheses are initially indefinite--that is, they are indeterminate from the perspective of the scientific creator. Deduction helps render this indefiniteness definite or precise. By analogy we would expect an artist's abduction to be likewise indefinite; therefore, by analogy, this second stage of art should help render it more definite. Thus, there must be some process by which an artist brings his vague image into focus. For example, if I want to express a feeling which is indefinite for me, in order to express it, I must begin to make it specific in certain respects. To be sure, projection is a part of this process, but it also depends on it. An artist must have some precision before he projects. Because there is no explicit description of this process, I leave it a vague idea. However, because it does appear necessary, I shall call it "artistic preciding" in the spirit of Peirce's logical use of "precide." I intend to take up this problem at greater length in the following chapters. For now, I proceed on the assumption of its reality and turn to the third and final stage of artistic creativity.

The final stage corresponds to scientific induction which experimentally tests hypotheses. This involves two steps: 1) setting up the experiment and 2) testing for specific results. In art this amounts to making a work of art in its precided form (notice the continuity and even intermingling of the stages) and then testing it for esthetic goodness. The making step is relatively straightforward as a methodological step, though it may not be an easy step in any actual artistic process. The testing step, however, within the context of Peirce's thought, is not so easily understood.

Unlike a scientist, an artist has no analogue against which to test his creation's correctness or worth [31]. An artist does not look for truth as correspondence but for truth as self-adequacy. Peirce follows Kant on this point: "Truth is conformity of a representation to its object" (1.578). Since a work of art has only its own created referent as an object, it can only be true to itself. The artistic goal is to create what is admirable in itself. The question is, what determines this self-adequacy and how do we test

for it? Peirce's answer had two sides: 1) an incomplete account of what good works of art are and 2) a psychological description of the approach needed to make judgments about works of art.

For Peirce, as we have already seen, a good work of art presented itself as a reasonable feeling. To do this it must have organized all of its qualitative parts into a single quality that can be comprehended at once: a "total resultant Quality of Feeling" (5.114). Peirce put it even more explicitly:

> In the light of the doctrine of the categories I should say that an object, to be esthetically good, must have a multitude of parts so related to one another as to impart a positive simple immediate quality to their totality: and whatever does this is, in so far, esthetically good, no matter what the particular quality of the total may be (5.132).

At about the same time, 1903, Peirce put it in another way; what is esthetically of value, he said, is:

> the total unanalyzable impression of a reasonableness that has expressed itself in a creation. It is a pure Feeling but a feeling that is the Impress of a Reasonableness that Creates. It is the Firstness that truly belongs to a Thirdness in its achievement of Secondness (MS. 310, p. 9) [32].

Thus for Peirce there was a *sine qua non* of a good work of art: the intelligible expression of a synthetic quality of feeling as a sign (5.137). Peirce provided us with a condition of value in works of art in the intelligibility of a synthesized quality of feeling. At the same time, however, Peirce tried to avoid providing a condition of esthetic goodness in the traditional sense that beauty was held to be a necessary condition of such goodness. He feared that such attempts must fail because they are too narrow as regards future works. With this in mind, in the very same paragraph as the first quotation above Peirce moved to the verge of esthetic relativism:

> and I am seriously inclined to doubt there being any distinction of pure esthetic betterness or worseness. My notion would be that there are innumerable varieties of esthetic quality, but no purely esthetic grade of excellence (5.132).

Peirce seemed to be inconsistent here. The problem is that he did provide us with a peculiar esthetic quality--the expression of a reasonable feeling--while he appeared to reject such attempts in principle. For example, he denied that all good works of art are beautiful, because in fact some works of art are not beautiful. Therefore, the "beauty theory" of art must be rejected as too narrow (1.613). What is interesting in Peirce's position, despite its seeming confusion, is that the quality he provided was intended to be broad enough to include any possible future quality as esthetically good. As such, it purported to be a genus for the various species--beauty, realism, expressiveness--which have been proposed as *the* esthetic quality. Unfortunately, Peirce did not develop his point in this direction. Instead he argued that his claim led to the view that there is no specific esthetic grade of value. This seems to defeat his purpose by relativizing esthetic judgment entirely. It is simply not clear why Peirce here argued in this direction. Apparently the claim derived from his desire to allow all possible qualities of feelings. Yet, he was aware of the difficulties of relativism. It would seem that despite this particular addendum, the criterion of reasonableness itself must determine esthetic goodness.

It is difficult to know precisely what Peirce was after at this point. On the one hand, he gave us a criterion for esthetic goodness. On the other hand, he said there is no better or worse in esthetic terms. The difficulty seems to stem from his problem with the issue of value itself in relation to the categories [33]. In another account of his view, in 1902, Peirce introduced the Greek notion, *kalos*, to replace beauty as the esthetic ideal: "Beautiful is bad; because one mode of being *kalos* essentially depends upon the quality being unbeautiful" (2.199). Peirce said no more than that

what is *kalos* is what is admirable in itslef. The ideal of *kalosness*, in being its own reason for value, is close to the claim that what is good is merely the presentation of a reasonable feeling. In the following year Peirce drew the positions closer together: "I do not see how one can have a more satisfying ideal of the admirable than the development of Reason so understood [as the creatively evolving embodiment of possibilities]" (1.615). Here Peirce followed his own implicit suggestion that the *kalos* is what does not need a reason: "The one thing whose admirableness is not due to an ulterior reason is Reason itself comprehended in all its fullness, so far as we can comprehend it" (1.615). We can view Peirce's theory, then, as merging *kalosness* and reasonableness as the central criterion of esthetic value. It is unfortunate that Peirce's brevity on this matter precludes a clearer understanding of his intentions; we must keep in mind that Peirce prefaced the entire discussion with an acknowledgment of his incompetence to deal with it.

Nevertheless, let me provide a general view of what this might mean as regards a single work of art. It appears to be the intelligibility or reasonableness of the presented quality of feeling which makes a work of art good or bad (less good) [34]. When we judge, this is what we look for. If there were to be degrees of esthetic goodness, they would correspond to the degrees of reasonableness of the qualities presented. Why Peirce viewed this as problematic is not clear. Nevertheless, his denial of such degrees at 5.133 seemed to be his final word.

In this rather circuitous description I have tried to make sense of Peirce's position concerning criteria for judging works of art. For, from the logical point of view such judging wants a reason. I do not think Peirce was at all clear on the matter, though I do think he saw what he was trying to avoid. If one were to follow up Peirce's view, I think Dewey's idea of "expressiveness" in *Art as Experience* might be a reasonable outcome [35]. But I can go no further on the strength of Peirce's writings alone. Now I want to turn to the question of how an artist finishes his "experiment" by judging his work. I want to suggest at the outset that this very

judging may be one source of Peirce's confusion, for while Peirce tried to establish criteria for esthetic judgments, he argued that esthetic judgment, unlike logical judgment, did not use reasons.

In order for an artist to end his artistic process, he must satisfy himself that his work is complete; he must rest his initial uneasiness through judgment of his work. Essentially, then, he must be a critic of his own work. Of this Peirce said:

> although I am still a perfect ignoramus in esthetics, I venture to think that the esthetic state of mind is purest when perfectly naive without any critical pronouncement, and that the sthetic critic founds his judgments upon the result of throwing himself back into such a pure naive state--and the best critic is the man who has trained himself to do this work most perfectly (5.111).

To examine his work, then, an artist must have enough self-control to approach his work in this purely naive state of contemplation. In the same way that an artist begins by examining the present in its presentness, he must end by examining his work in its presentness (MS. 404). If the work is admirable in itself, then the creative process is finished. And the admirableness depends on the criterion of reasonableness or *kalosness* which we examined above.

Peirce made it clear, however, that one person's judgment does not determine the final opinion on the reasonableness of a presented quality of feeling, for such a view would entail some form of esthetic hedonism which he explicitly rejected (5.110). The act of esthetic contemplation bears with it no intuitionistic certainty. Just as with scientific induction, artistic testing is both incomplete and fallible. An artist must simply do his best to approach his work with the proper frame of mind. Moreover, he must fund his experience with examples and ideas of esthetic value before entering contemplation. Yet, once the contemplation is under way such rational factors should not directly interfere; they should remain as preparatory. An artist must believe that he is finished while recognizing that his particular work of art may not be in its final

possible form, just as a scientist accepts a hypothesis while understanding that it is not the final opinion about the world. In both cases Peirce's idealism reserves final judgment for what an infinite community *would* judge to be the case in an infinite amount of time.

This, then, is an outline of Peircean artistic creativity as drawn in analogy to Peirce's understanding of scientific creativity. Several points must be noted. First, the case for artistic abduction seems well established in Peirce's writings; his semiotic lends special definition to the account. This is why, I think, most articles on Peirce's theory of art deal primarily with the semiotic. If the abductive stage is present, however, it is reasonable to suppose that it is followed by two parallel stages, especially since the artistic process is one of self-control. Peirce gave no full account of a deductive, clarifying stage, but his suggestion concerning projection is helpful. The method of preciding I shall take up later. Lastly, there is the testing stage--"artistic induction." On this Peirce gave us information, though his arguments were not entirely clear. This stems once again, I think, from his predilection for thinking like a logician. In general terms, the final stage amounts to approaching a made work of art through esthetic contemplation to *see* if it presents a reasonable feeling as a sign. While such a description is not without problems, it seems best to unify Peirce's arguments. With this framework of a normative, methodological understanding of Peircean artistic creativity in hand, let us turn to our second analogy which will allow us to fill out more of the details of the process.

Chapter 4
CREATIVE EVOLUTION

> The endless variety in the world has not been created by law. It is not of the nature of uniformity to originate variation, nor of law to beget circumstance. When we gaze upon the multifariousness of nature we are looking straight into the face of a living spontaneity. A day's ramble in the country ought to bring that home to us (6.553).

Evolution and God

Up to now I have been dealing with artistic creativity in its formal appearance. That is, I have been treating it from the perspective of esthetics as a normative science in analogy to science as a logic of inquiry. This, of course, is not to say that I have avoided psychological description. Any discussion of thought processes, as Peirce admitted, must involve some element of psychological description. Nevertheless, from within the Peircean architectonic I have been presenting creativity in its normative aspect. Now I shall follow Peirce's cosmological and phenomenological accounts of creative evolution and then apply these by analogy to human creativity. While this is not presented as a normative account, we should notice that it has an inherent normative aspect. That is, since God is the creator involved, if we hold God to be the highest or in some sense the most ideal being, then His creative process should be the highest or most ideal as well. Therefore, as a regulative ideal, God's creativity becomes a norm toward which our creativity ought to strive to compare. Indeed, then, while our

normative argument involved psychological description, so does our descriptive account involve an inherent normative aspect.

Before developing a description of the relevant features of Peirce's creative evolution, I need to set the stage for his belief in such a view. While I shall avoid a thoroughgoing analysis of Peirce's theology, I shall give a general view of his belief in God. Since this topic has already been well and thoroughly developed by Donna Orange, David Pfeifer, and Vincent Potter among others, I shall rely on their work as a framework within which to address my specific concern for the problem of artistic creativity [1]. The one theme I shall emphasize perhaps more than these others is the significance of developmental teleology and the corresponding importance of the three stages of growth in general. In addition, I shall begin by showing how Peirce accepted agapism, or creative evolution, as a solution to the traditional dilemma of determinism. Indeed, this argument is crucial for a theory which views the artistic process at a human level as purposive. Peirce did not claim originality for his view, but he did say that, at the least, it had been neglected during his lifetime, especially by both scientific mechanists and absolute idealists [2].

Peirce had no love for religion as a dogmatic codification of "truths." Religion in this way attempts to block the road of scientific inquiry; it closes the doors on the universe. In 1903 Peirce complained about this aspect of religion:

> Religious truth having been once defined is never to be altered in the most minute particular; and theology being held as queen of sciences, the religionists have bitterly fought by fire and tortures all great advances in the true sciences; and if there be no true continuous growth in man's ideas where else in the world should it be looked for (1.40)?

Despite this dim view of the doctrinaire qualities of religion, Peirce felt that there need be no conflict in principle between science and religion. Indeed, he even attacked scientists who arbitrarily shut out the possibility of God's reality (1.127). The dispute is

significant for our purposes only in showing that Peirce was interested in certain forms of religion and that his discussions about God were neither accidental nor ingenuine. As Mary Mahowald argues, Peirce's "attitude towards 'God' and 'religion' remains open so long as neither represents opposition to scientific inquiry" [3]. In short, for Peirce, God and evolution could work together.

Peirce did believe in the reality of God as he quite plainly stated in 1906:

> So, then, the question being whether I believe in the reality of God, I answer, Yes. I further opine that pretty nearly everybody more or less believes this, including many of the scientific men of my generation (6.496).

However, Peirce was wary of trying to describe God. While he thought some notions applied, he did not want to personalize God to the extent of limiting Him. Thus, for example, he argued, "since there is a strong reason to hold that what we call consciousness is either merely the general sensation of the brain or some part of it . . . God probably has no consciousness" (6.489). God was for Peirce, as we shall see below, in some sense personal; however, He was not humanly embodied or limited. On the other hand, Peirce held, "The word 'God,' so 'capitalized' (as we Americans say), is *the* definable proper name, signifying *Ens necessarium*; in my belief Really creator of all three Universes of Experience" (6.452). There are numerous other Peircean descriptions of God as creator and these are what I am interested in, for God as creator is the ground of my second analogy. Indeed, in 1906 Peirce asked himself: "Do you believe this Supreme Being to have been creator of the universe?" (6.505). His answer: "Not so much *to have been* as to be now creating the universe . . ." (6.505). At this point Peirce directed his reader to a series of articles he had written from 1891-1893 for *The Monist* [4]. We have a definite lead, then, and need only to follow it.

The second of these articles is "The Doctrine of Necessity

Examined." This provides us with a good starting point for Peirce's move to creative evolution. As I suggested above, Peirce wanted to go between the horns of the traditional dilemma of determinism. In "The Doctrine of Necessity Examined" he began an assault on the dilemma by attacking the horn of determinism. Peirce was here interested in rejecting two forms of determinism: mechanism and logical predetermination [5]. He began by arguing against the need of necessitarianism as a postulate of scientific reasoning; postulates, he said, prove nothing. Peirce then maintained that such reasoning gets along fine without mechanism:

> To say, for instance, that the demonstration by Archimedes of the property of the lever would fall to the ground if men were endowed with free will is extravagant; yet this is implied by those who make a proposition incompatible with the freedom of the will the postulate of all inference (6.39).

The second argument centered on observational evidence. While there is evidence of regularity in the universe, Peirce argued, there is no evidence of the exact and universal regularity proposed by necessitarianism. Indeed, he added, "in regard to this *exactitude*, all observation is directly opposed to it" (6.46). Thus, observation itself was the first ground of Peirce's arguments in defense of the reality of chance and freedom. Peirce developed this defense in the ensuing paragraphs, thereby indirectly attacking determinism. One of the observations important for our general purposes is the existence of mind, which Peirce held that determinism denied. In short, Peirce's argument was designed to account for the observed diversity and growth in the universe, and some element of spontaneous chance was required for this. Thus, Peirce denied mechanism and admitted chance, though he did not say here precisely how chance is effective.

Despite his defense of an element of chance in the universe, Peirce did not defend tychasticism or what is now called pure indeterminism. On the one hand, he defended "tychism" which

holds "that absolute chance is a factor in the universe" (6.201). How, precisely, chance is a factor we shall examine below. On the other hand, he denied tychasticism which holds that chance is the only factor in the evolution of the universe (6.302). Peirce's reason for denying tychasticism was the fact of some regularity in the universe; the world is not in a state of perpetual chaos. Therefore, Peirce rejected both chance and necessity as sole operators of the universe and looked instead to a view which included the benefits and excluded the defects of both tychasticism and necessitarianism: that is, agapasticism. As Potter states: "Only agapasticism satisfactorily accounts for all the various sorts of development going on in the universe by admitting both chance and law, but uniting them in and through habit" [6].

Agapasticism is the doctrine that "evolution by creative love" is of principal importance in the existence and life of the universe (6.302). Now, there can be little doubt that Peirce intended this form of evolution to be governed by the creative God which he acknowledged. Indeed, he opened his article "Evolutionary Love" with a discussion of God's *agape* as a factor in the universe. Here, he concluded:

> Love, recognizing germs of loveliness in the hateful, gradually warms it into life, and makes it lovely. That is the sort of evolution which every careful student of my essay "The Law of Mind" must see that *synechism* calls for (6.289).

This clearly tells us that in examining God's creative process, as the creative evolution of the universe, we must inspect closely the role of *agape*, for its role should be central to the process. True, Peirce did leave room for some element of chance in his admission of tychism; but we must fit this element into creation within the context of Peirce's agapasticism. Thus, I shall examine the role of chance separately.

To set the stage for my second analogy, I want to borrow a phrase from Murphey which, although it served a different purpose

for Murphey, describes Peirce's general position: that is, "Peirce asserts a peculiarly close relation among feeling, aesthetics, and God" [7]. Murphey points out some of this close relation in Peirce's "Neglected Argument for the Reality of God" and elsewhere (6.452-493). It is a relation which pervades nearly all of Peirce's discussions of God. What it suggests, viewed from my concern for artistic creativity, is that God is in some sense the perfect, or highest order, artist, while at the same time as Orange points out He may be viewed as the highest order reasoner [8]. If the previous chapter is accurate, God's association with feeling and esthetics clearly indicates such a view, because feeling is the concern of artists primarily and esthetics is normative for artistic creativity. This clearly squares with Peirce's description of God: "I think we must regard Creative Activity as an inseparable attribute of God" (6.506).

This interpretation of Peirce's God, which emphasizes artistic creativity, is the basis of my second analogy and allows two approaches to the subject at hand. As Orange points out, for Peirce there was a reciprocity between God and His purpose: "God and the world are the most general of symbols and are signs of each other" [9]. And later she adds: "In the early 1890's, Peirce began to identify the God of religious experience (not of theologians) with both the process and product of evolution" [10]. Therefore, I shall first examine the life of the world as the life of a work of art. According to Peirce, "the universe is a vast representamen, a great symbol of God's purpose, working out its conclusions in living realities" and it "is necessarily a great work of art, a great poem" (5.119). In viewing the stages of the semiosis of the universe as a work of art, we shall see the pragmatic or "concluding" meaning of creativity; we shall see the results and import of each stage of the creative process. Secondly, I shall examine God's activity in relation to the universe as a work of art. It is here that Peirce introduced several concepts of importance: the role of chance as spontaneity, the notion of developmental teleology, the effects of cosmic continuity in creation, and the role of *agape*. Through these ideas Peirce described creation and did his best to define God

vaguely in terms of His activity, a task he always held to be fallible. This I shall interpret as the direct expression of Peirce's understanding of artistic creativity as exemplified in God. In this discussion, we should not lose sight of the first analogy, for though this description does not directly depend on that analogy, it does suggest some correlations between the two which, I think, lend mutual support to both arguments. Such mutual support, as Peirce often argued, need not be viciously circular. Moreover, the ease with which the two positions blend indicates at least the plausibility of the overall view I am proposing.

In describing the stages of the universe as a work of art, I am not simply reading Peirce's categoriology into a creation of my own. Peirce generally acknowledged three stages of an ideal evolutionary universe. For example, in 1890 in "A Guess at the Riddle" he said: "The starting-point of the universe, God the Creator, is the Absolute First; the terminus of the universe, God completely revealed, is the Absolute Second; every state of the universe at a measurable point of time is the third" (1.362). The evolution of the universe thus involves three stages which in crude terms amount to beginning, middle, and end. This establishes the thirdness, and thereby the continuity and reasonableness, of our universe, since the beginning and end are mediated actively by the middle which in this case is the actual state of affairs at any point of time. In a letter to Christine Ladd-Franklin in 1891, Peirce described his early cosmological speculations at length:

> I may mention that my chief avocation in the last ten years has been to develop my cosmology. This theory is that the evolution of the world is *hyperbolic*, that is, proceeds from one state of things in the infinite past, to a different state of things in the infinite future. The state of things in the infinite past is chaos, tohu bohu, the nothingness of which consists in the total absence of regularity. The state of things in the infinite future is death, the nothingness of which consists in the complete triumph of law and absence of all spontaneity. Between these, we have on *our* side a state of things in which

> there is some absolute spontaneity counter to all law, and some degree of conformity to law, which is constantly on the increase owing to the growth of *habit* (8.317).

The first stage of the universe is that of vague potentiality. Peirce held that "all evolution we know of proceeds from the vague to the definite" (6.191); therefore, "we cannot suppose that it [the derivation of our universe] began elsewhere than in the utter vagueness of completely undetermined and dimensionless potentiality" (6.193, see also 1.411, 1.447). The first state is the universe in its pure firstness as a Platonic world, or world of Platonic worlds: it is a chaos of pure qualities (6.208). The difficult issue here is that for potentiality to be inherent in the possibility which embodies firstness, this stage of evolution must be a state for God, that is, of which God is "cognizant" in whatever way He may be so. Without God's potentiality for agency, the universe would remain merely possible and not potential, for to be potential means to be "indeterminate yet capable of determination in any special case" (6.185). Possibility, on the other hand, might mean only to be logically possible (See 6.364-371). A difficulty arises here insofar as Peirce employed two conflicting views of the universe's origin. Sometimes he called it nothingness and sometimes chaos. The two are distinct: nothingness is pure firstness and chaos is pure firstness in relation to God (See 6.200 and 6.217). If we maintain the distinction, our problem is solved, for we are interested in chaos because of its relatedness and not pure nothingness. In this initial state, then, the universe is utterly indeterminate, though its potential lies sleeping in the chaos. Thus, the original chaos is that out-of-which a specific universe must come.

This leads us to the second state of the universe which is that into-which specific potentialities get created: the universe as it exists for us or the universe of time. This stage of evolution is characterized by two polar elements: regularity and diversity. On the one hand, this stage exhibits growth toward concrete reasonableness; laws or habits develop as the universe evolves and

these become more and more regular. Peirce described it as follows: "At present, the course of events is approximately determined by law. In the past that approximation was less perfect. The tendency to obey laws has always been and always will be growing" (1.409). So far as it is a work of art, as Murphey puts it, "the universe of habits is a developing icon of God's purpose whose ultimate aim is the revelation of his glory" [11]. On the other hand, an element of spontaneity is also found in the world at any given time. In other words, in general the first state does not disappear as evolution takes place, but only certain aspects of it do. What were originally spontaneities take on habits and become law-like. But there are new spontaneities still arising. As Peirce put it, "the chance divergences from law are perpetually acting to increase the variety of the world . . ." (6.101).

This brings us to the final stage of evolution in which God is completely revealed. In the second stage the universe, as a work of art, is growing; in the last stage its growth ends--it is complete as a work of art and symbol. Now, I began by acknowledging that Peirce applied these stages to an ideal evolution and not to any particular evolution. The importance of this is that it allows us to view the final stage as a regulative ideal or limiting case for the end of any actual evolution. Thus, the question as to whether the evolution of our universe will reach the final stage as a whole is left open. I shall take up this problem specifically at the end of this chapter.

Regardless of what we decide on this issue, the final stage is characterized by completeness and fixity. It exemplifies secondness insofar as everything is crystallized or reduced to fact. In such a state there would no longer be an element of chance or spontaneity in the universe; therefore, there could be no life or growth. For Peirce, such a world would be purely matter: "dead matter would be merely the final result of the complete induration of habit reducing the free play of feeling and the brute irrationality of effort to complete death" (6.201). Or again, "The nothing of negation is the nothing of death, which comes *second* to, or after, everything" (6.217). Death, then, is the final state of a fully evolved universe.

As a sign or work of art it would be a frozen symbol with no interpreter to behold its interpretant. This of course would also entail the death of God since His reality depends reciprocally on the growth of reason or the instantiation of thirdness.

Since I follow Orange and Pfeifer in viewing the universe as the creative end of Peirce's God, and since my specific purpose is to view God as artist and universe as art, I am in need of some guide through the framework of Peirce's cosmology. Taken as ideal descriptions, these three stages provide such a guide and thus facilitate the explication of the relation of God to the actual evolution of the universe. We must keep in mind, however, that so far as they reflect Peirce's categories, the three stages may be viewed as continuous and not mutually exclusive. Therefore, it is possible, and perhaps necessary, to admit that all three aspects or stages may be found at any given time in an actual evolutionary process. In addition Peirce warned us against overspecifying our conception of God. As Potter puts it, "it is vagueness which allows our notions to be about God" [12]. Nevertheless, this did not prevent Peirce from making some specifications both implicitly and explicitly. With these considerations in mind, then, let me develop the relation Peirce saw between God as creator and evolving universe as creation.

I take as the starting point of creation God's relation to the chaotic firstness. As I noted above, Peirce was unclear as to the status of firstness in itself (as he should have been, since he was human), but that need not affect us here. Whether we take the origin of the world as in or out of relation to God, it is still full of firsts which have not been related to each other. "The first chaos, " Peirce said, "consisted in an infinite multitude of unrelated feelings" (8.318). Thus, we can call them pure firsts. What, then, is God's relation to these at the outset of creation?

Peirce began by asserting that creation and evolution depend on final causality. This indeed is the reason Peirce defended agapasticism, for tychasticism has no purpose. On the other hand, Peirce also rejected the efficacy of blind *ananke* and therefore rejected traditional theistic teleology as defended, for example, by

Jonathan Edwards. He attacked as necessitarian those who "maintain that the constants of position and velocity are subject to a law not merely formal, but are governed by final causes in such a way that there is no arrangement or coincidence whatever which was not specially intended by the Creator" (6.101). Clearly, Peirce had in mind a new understanding of final causality or teleology [13]. Oliver states Peirce's position succinctly: "By its very nature the final cause is vague, unspecific, in requirements it places upon what will satisfy it" [14].

What Peirce had in mind for God's creative activity is what he called developmental teleology. His own words best express the point:

> But the word coordination implies somewhat more than this [a simple connection of ideas]; it implies a teleological harmony in ideas, and in the case of personality this teleology is more than a mere purposive pursuit of a predeterminate end; it is a developmental teleology. This is personal character. A general idea, living and conscious now, it is already determinative of acts in the future to which it is not now conscious. This reference to the future is an essential element of personality. Were the ends of a person already explicit, there would be no room for development, for growth, for life; and consequently there would be no personality. The mere carrying out of predetermined purposes is mechanical. This remark has an application to the philosophy of religion. It is that a genuine evolutionary philosophy, that is, one that makes the principle of growth a primordial element of the universe, is so far from being antagonistic to the idea of a personal creator that it is really inseparable from that idea; while a necessitarian religion is in an altogether false position and is destined to become disintegrated. But a pseudo-evolutionism which enthrones mechanical law above the principle of growth is at once scientifically unsatisfactory, as giving no possible hint of how the universe has come about, and hostile to all hopes of personal relations to God (6.157).

As we proceed, we shall examine the intricacies of developmental teleology. For now we are concerned with its inception, with the origin of God's creating.

Since "a genuinely evolutionary philosophy" demands growth as "a primordial element," and since growth depends on a person's "ends" being non-explicit, God, so far as He is a personal God in Peirce's sense, must have ends which are non-explicit or indeterminate. Whereas many traditional theologies use omniscience to argue that God's telos must be completely explicit and determinate, Peirce argued, "I do not see why we may not assume that He refrains from knowing much. For His thought is creative" (6.508). As Orange maintains, "unwelcome as the conclusion may be, growth must somehow be admitted as part of God's nature" [15]. In an important sense, God cannot know precisely what He is going to create until He creates it.

Another way to view this element of growth in God's creativity is through Peirce's descriptions of final causality. "Now," he said, "a desire [as a final cause] is always general; that is, it is always some *kind* of thing or event which is desired . . ." (1.205). Thus, God must begin with a telos which is general; He seeks to create a "such," a "universe," but does not yet know what the specifics shall be [16]. God's case is a radical version of Peirce's example of a baker who intends to make an apple pie:

> An apple pie, then, is desired--a good apple pie, made of fresh apples, with a crust moderately light and somewhat short, neither too sweet nor too sour, etc. But it is not any particular apple pie; for it is to be made for the occasion; and the only particularity about it is that it is to be made and eaten today (1.341).

While Peirce would not have us work out details, the fact that God is a personal creator who functions in a developmentally teleological fashion necessitates this general account of God's status. Orange points to the tension in Peirce's thought here: "Although Peirce later hesitated to attribute growth to God, his

identification of God with an evolutionary *summum bonum* forced him to admit that God grows--achieves being" [17]. God's activity, then, shall be to render precise His telos in its respects of inexplicitness and indeterminateness. In particular, God pursues the *summum bonum* through the growth of concrete reasonableness. As Pfeifer concludes, "Because the ideas of growth and evolution are inseparable from God, and because the power of this ongoing creation is God, we begin to grasp that a discussion of the effects of evolution is really a discussion of the effects of God" [18].

God must begin (in whatever way He may be said to begin) by addressing the chaotic firstness with His telos in mind. Obviously, since His telos is non-explicit, He cannot do this the way a contractor addresses building materials; the details of God's blueprint are lacking. Nevertheless, He must view the chaos as in some sense the "material" or the "out-of-which" for creation. Since God cannot know before He creates it specifically what He will create, His approach must be to open Himself to the variety of qualities. He must look for a possibility which potentially fits His telos. Murphey's linking of Peirce's God and esthetics comes into play here, for Peirce's description of the esthetic frame of mind seems requisite as an analogue of God's relation to the chaotic firstness. That is, there appears to be a partial passivity in God's openness to what fits His telos--to what is esthetically appealing. Peirce described such esthetic contemplation as follows:

> First, imagine a person in a dreamy state. Let us suppose he is thinking of nothing but a red color. Not thinking about it, either, that is, not asking nor answering any questions about it, not even saying to himself that it pleases him, but just contemplating it, as his fancy brings it up (MS. 404, p. 31).

Clearly Peirce's God is active as well. The initial state of esthetic contemplativeness is a single aspect of God as creator and I have described it as closely as seems allowable under Peirce's warning of over-specification. As Orange points out, "The esthetic

ideal grows by means of being expressed" [19]. God must then actively bring some qualities into existence or into a state of secondness. It is in this evolutionary transition that we find the role of chance and also the role of agape. The meeting of these two seems to me Peirce's most original insight into the problem of creativity. He accomplished the meeting precisely by presenting creation in the guise of developmental teleology or growth [20].

Although Peirce acknowledged that the claim that "what is" is God's will is in a sense accurate, he also maintained that "what is" is because it is admirable in itself (6.199). In this much, "what is" is partly responsible for its own existence and potentiality alike (6.198). Still, God, as creator, is the efficient cause of that which will fulfill his desire or telos. There is both chance or spontaneity and creative control involved here. Once again, and as Hartshorne suggests, God may not know what He is going to create until He creates it [21].

The Role of Chance

God's relation to the chaotic firstness suggests how chance might be effective within Peirce's cosmology. Chance is involved in God's creativity at the point where He chooses what He creates when He creates because it is hypothetically admirable in itself and therefore is attractive. God, in His "esthetic frame of mind," realizes or reifies what is attractive. What He has no control over is what qualities will be admirable and what admirable qualities He will encounter first. As Peirce pointed out at 6.406, chance is reflected in an absolute lack of thirdness or thought. What appears to God as attractive first appears spontaneously--by chance [22]. Thus it is that God's telos is specified by chance--that order evolves from spontaneous origins. The role of chance is not that God might not have been attracted to these particular firsts, but that He could

have been attracted to other firsts as well or in another order. Thus, there is no ultimate specific reason behind the embodiment of the firsts that are embodied, though there is a general reason in God's love and interaction which draws them into secondness and thirdness. As Orange puts it: "Creation is the gradual progress, by means of sporting variation and of the tendency toward habit-taking, from chaotic nothingness to concrete reasonableness, the *summum bonum.* The deity's creative functions are to introduce the chance variations, and, as Ideal, to draw the world toward its full actuality as God's creation" [23].

It could well be argued that the above view weakens Peirce's idea of chance. One might maintain that Peirce in "The Doctrine of Necessity Examined," for example, made chance an active character of the universe and that therefore chance should be described as a more positive force than I have allowed. Such an interpretation, in making chance an agent, presents Peirce's cosmology with serious problems. First, as Oliver argues, if chance is the fundamental agent in the universe, then the evolving universe can only be explained in terms of it; reason loses its efficacy. Therefore, Oliver suggests, Peirce undermined his own claims--he was inconsistent [24]. Similarly, Gallie argues that "there are two quite fatal objections to Peirce's idea of pure chance 'generating' a tendency towards association or regularity or habit from a state of affairs in which there was 'no law but mere indeterminacy'" [25]. The first problem is that Peirce's view makes chance a law (of randomness of qualities) which presupposes "certain actual physical conditions whose persistence . . . will ensure the applicability of the law that determines the randomness of the distribution" [26]. If chance is a law, then it is not chance; and if chance presupposes physical conditions, then it does not occur in the realm of pure firstness. Therefore, says Gallie, "the idea of pure chance" seems inapplicable within Peirce's cosmology [27].

Gallie's second objection is, he says, "even simpler and more obviously fatal" [28]. "If it can be given any definite meaning (which may be doubted)," he says, "the phrase 'a universe of absolute chance' must mean a collection of objects or characters

such that it would be false to say of any two or more of them that they show *any* tendency towards regular connection one with another" [29]. In effect, then, Gallie's charge is that one cannot get to regularity from chance. In other words, chance agency is self-defeating as an explanation.

While these objections are certainly critical if applicable, I want to try to show that they can be rejected by denying that chance is an agent in itself or a law. Indeed, for Peirce, it seems chance was the antithesis of positive, necessitarian agency or law. As I argued earlier Peirce clearly rejected tychasticism and in doing so rejected 'a universe of absolute chance' of the kind Gallie supposes. Chance was not the most effective cause in the universe for Peirce, *agape* was. Thus, Gallie's second objection is, I believe, the most easily answered. The tendency towards regularity comes out of chance, not *by* chance; it comes "by virtue of a positive sympathy among the created springing from the continuity of mind" (6.304).

To make chance an agent is to give Peirce's cosmos two primal agents--a dualism notable for its absence from Peirce's writings. The element of chance is rather a quality of the firstness of the chaos. It is the quality of lawlessness. This brings us to Gallie's first objection. Peirce did in a sense present chance as law, but it was as the law of lawlessness (6.36-65). Thus, it is importantly different from any law which makes the universe mechanically determinate. As law, then, chance's reality is not agentive even in the minimal sense that, for example, gravity might be said to be an efficient cause. Rather, chance's reality is the sheer indeterminacy displayed by the original chaos in relation to a future universe. Apparently, Gallie's addendum that a state of persisting physical conditions is required for chance to be effective reflects the needs of statistical probability. In other words, if we want to apply math to the universe, this is what is required. I make no pretensions of knowing precisely what mathematical probability needs to be effective, but even if persistence is required, I do not understand why physicality is. It would seem that we could apply chance as probability even to a realm of gremlins. And

if persistence is all that is required, Peirce's real vagues persist as much as anything might be said to persist.

Gallie is arguing that because our *use* of probability has to do with things which we can measure, that probability only exists when things are measurable [30]. This is surely a *non sequitur.* Peirce clearly held that *we* cannot perceive or even conceive, except vaguely, the original chaos because we depend on thirdness for intelligibility and it is not present in the original chaos [31]. However, it does not follow that because our understanding of chance depends on thirdness that chance itself depends on thirdness or secondness. The very point Peirce was trying to make was that chance is a first--it is freedom and spontaneity. Chance's role as "fortuitous distribution" is simply what I have shown above: God does not control His encounter with particulars of the chaos.

For Peirce, God was creator and sole agent of the origin of the universe. And as creator He was subject to the element of chance in the cosmos as I described above. Still, the claim that chance is an agent is not difficult to come by. The arguments for chance as an agent or agentive cause depend primarily on several manuscripts: "Fortuitous Distributions" (6.74-81), "The Logic of the Universe" (6.189-213), and "The Origin of the Universe" (6.214-221). These are important manuscripts for understanding Peirce's cosmology; indeed, they are essential. However, 1) they should be taken in their entirety and 2) they should be viewed in the light of Peirce's other work.

If we take, for example, "The Logic of the Universe," we find that chance plays an important but secondary role in Peirce's system:

> Permit me further to say that I object to having my metaphysical system as a whole called Tychism. For although tychism does enter into it, it only enters as subsidiary to that which is really, as I regard it, the characteristic of my doctrine, namely, that I chiefly insist upon continuity, or Thirdness (6.202).

Thus, chance may be a necessary condition of creative evolution, but it is not a causal source. It is a quality of reality, a mark of the universe. It is rather continuity that maintains evolution and, as I shall argue, continuity, in being the law of mind, derives from Peirce's God as creator.

Another example, specifically in reference to Gallie's claims, comes from Peirce's 1910 "Additament" to his "Neglected Argument." Here Peirce argued that there must have been a "tendency to take habits" in the chaotic, original nothingness. Such a tendency must grow on its own account; therefore it appears to Gallie that chance, by creating this random tendency, is the agent which gets us out of the original state into a "this-such" universe. However, Peirce made the claim in connection with his defense of God as "pure mind" which "has its being out of time . . ." (6.490). Gallie appears to overlook this. Peirce also mentioned here several other tendencies which by their increase would "eliminate their subjects from the universe" (6.490). Thus, while the tendency to take habits combined with a tendency to act in any way must increase itself, it does not know how it shall increase itself. In other words, the tendency taken could be toward immediate self-destruction. What we need, then, is God to act on and with the necessary conditions available. It is through God, in conjunction with the chance element of the world, that the actual tendencies of evolution arise.

My final objection on this point is the simplest. We saw above that Peirce directed us from his 1906 discussion of creation to his 1892 articles on the nature of mind, continuity, and evolution. To suppose his move here was accidental is to ignore the evidence. We must, therefore, read the earlier in view of the later and the later in view of the earlier. In other words, we must have in mind Peirce's idea of a God who has been and is now creating the universe. When we do this, the notion that chance is anything other than an important necessary condition of agapastic evolution seems to twist Peirce's intent.

This, then, is the role chance plays in Peirce's creative evolution. When we view chance from the side of actuality rather

than possibility, we call it spontaneity. Peirce used the two terms interchangeably for the most apart, but he sometimes suggested the distinction here and it is a convenient distinction for clarity. Thus, new things come into the universe by way of spontaneity. From God's perspective this is the actualization of the attractive qualities. In other words, God brings firstness into secondness by thirdness. As Peirce argued: "A reason has its being in bringing other things into connexion with each other; its essence is to compose: it is triadic, and it alone has real power" (6.343). It is the bringing things into being which is God's crucial role in the origin of the universe. As Murphey says: "This is in effect the burden of the law of mind, which, given Peirce's equations of chance and feeling, *haecceity* and will, and law and habit, describes the development of law from chance" [32]. While this is perhaps the least interesting aspect of creation, it is certainly important. It is in this "making" stage that God begins to create a "this-such" out of His "such." This is the role efficient causality must play in Peirce's notion of creative evolution. "The court cannot be imagined," he said, "without a sheriff. Final causality cannot be imagined without efficient causality . . ." (1.213). God, then, is both the court and the sheriff, though His control of the court is minimal and evolving. In itself the brute actualization of potential qualities is spontaneous "secondization" (See 1.327-328). However, taken together with a growing telos, it becomes the mechanical aspect of evolution. As Orange says of Peirce: "Reflection on evolutionary theories had taught him that God's creative action must be both teleological and immanent in evolutionary processes themselves"[33].

Continuity and Agape

The importance of this first stage of evolution is that of making precise God's telos. God here begins to specify the universe in various directions. Thus, a universe for us evolves. One point we

must remember is that for Peirce the making stage of creation did not occur all at once: it "did not take place during a certain busy week, in the year 4000 B.C., but is going on today and never will be done . . ." (1.615). In this aspect of creation God embodies the qualities of feeling in making them actual. This of course corresponds to our previous discussion of artistic creativity in which we saw that an artist embodies qualities of feelings in works of art. The difference is the degree of firstness which the qualities have. On this point there seems little more to say. The secondary literature, unless it disputes the whole of Peirce's theism, does not argue the point. It is a point Peirce explicitly made insofar as he held that "the universe is a vast representamen, a great symbol of God's purpose, working out its conclusions in living realities" (5.119). While Peirce did not pretend to describe specifically God's activity, he did attempt to describe what this activity accomplishes.

This brings us to the brink of the general evolution of our universe. We have gotten from potentiality to actuality, so that "tendencies" may now begin to develop regularities. In order to provide a somewhat fuller account of this evolution and its end, I want to try to answer two possible objections to Peirce's account thus far. The general criticism, that it is a vague account, Peirce acknowledged; however, he held that its vagueness did not prevent it from having some meaning. On the contrary, as Potter points out, "it is vagueness which allows our notions to be about God" [34]. But there are two more specific objections: 1) Peirce argued that creation and evolution are continuous while maintaining the rational discontinuity of chance and spontaneity and 2) Peirce argued that God does not have full rational control over creation, without specifying in what sense He has control at all.

The first problem stems from the brute move from potentiality to actuality. Since the two modes of being are distinct, it seems there must be a point of discontinuity between them. Now, Peirce defined the element of chance or spontaneity in the universe in part as "the character of not resulting by law from something antecedent" (1.161). Thus, there is no "rational"

continuity between quality x in potentiality and quality x in actuality; again, insofar as reasoning is predetermining, God does not create from a complete blueprint. Spontaneity thus entails disontinuity of a sort. In view of this, how does continuity play its central role in creation?

Peirce attempted to solve this problem directly at first. He argued that potentiality and actuality are continuous though distinguishable, just as the colors red and violet are distinct thought there is no point of discontinuity between them. While this is satisfying to a point, it does not rid us of the feeling that radical novelty or difference in order of being is here involved. That is, whatever is a new actuality is no longer potential--it cannot be reduced to what was, to antecedents. So regardless of the actuality/potentiality continuum, every creation involves a radical break from potentiality.

To answer this nagging objection, we can turn to what Esposito calls Peirce's "discontinuous continuity:" [35]

> My definition of a continuum only prescribes that, after every innumerable series of points, there shall be a *next* following point, and does not forbid this to follow at the interval of a mile. That, therefore, certainly permits cracks everywhere (4.126).

Or, as Peirce also described: "now a continuum is merely a discontinuous series with additional possibilities" (1.170). This view allows us to say that creation is continuous even though it involves a rational discontinuity--that is, even if there is no plan of order behind the continuity. However, as Esposito rightly shows, this leaves us with a new problem. "Even so, " he says, "we are still left with the problem of explaining under which circumstances a *next* is or is not allowed. And this would seem to require a continuum behind the continuum" [36]. Let us bring this point to bear on our argument. While Peirce allowed for a discontinuous form of continuity and thereby solved our first problem, he did not tell us what allows the discontinuous continuity to be continuous.

The problem specifically is that the continuum from potential x to actual x in being without a known reason behind it is essentially dyadic and "No perfect continuum can be defined by a dyadic relation" (6.188). How, then, do we preserve the break and obtain a perfect continuum?

Esposito's answer of a continuum behind a continuum seems correct as Peirce's words illustrate:

> I draw a chalk line on the board. This discontinuity is one of those brute acts by which alone the original vagueness could have made a step towards definiteness. There is a certain element of continuity in this line. Where did this continuity come from? It is nothing but the original continuity of the blackboard which makes everything upon it continuous (6.203).

Inasmuch as Peirce's God is admittedly personal, and therefore a mind, we may apply to Him the general tenets of the "law of mind." It is precisely continuity and generality which constitute this law: "to say that mental phenomena are governed by law does not mean merely that they are describable by a general formula; but that there is a living idea, a conscious continuum of feeling, which pervades them, and to which they are docile" (6.152). In "Evolutionary Love" Peirce went even further and suggested that with specific regard to the evolution or development of ideas, *agape*, as an aspect of mind, was effective. In applying this to God's creativity, let me suggest that God's living *agape* stands as a perfect continuum which both grounds and guides the discontinuous continuity of the actualization of a quality of feeling. On the one hand, this allows us to maintain the discontinuity of creation, for God still does not know what He will create until He creates it. On the other hand, it provides creation with the continuity of a cherishing or loving agent. Once again, in agapasm, "advance takes place by virtue of a positive sympathy among the created springing from continuity of mind" (6.304). To describe this we might think of a dotted line on an infinitely long highway. In itself, the dotted line presents a discontinuous continuum with

"cracks everywhere." However, it only becomes a perfect continuum in its relation not to its own discrete points but to the continuity of the highway. This I take to be what Peirce was after when he wrote: "The moment of love is circular, at one and the same impulse projecting creations into independency and drawing them into harmony" (6.288). *Agape* allows for rational discontinuity in creation, while providing the continuity of a caring creator.

It might be misleading to make too much of the problem of continuity as it relates to creation. Peirce did not address this specific relation in its details, nor have I found any commentators who address the issue at length. Moreover, Peirce's idea of continuity is one of the most difficult to grasp. Like his notion of abduction, his idea of continuity evolved from his earlier work to his later work and his discussions of continuity move among the realms of mathematics, metaphysics, and cosmology often without warning. In any event, though I believe a problem exists, I also believe it is answerable within the context of Peirce's system. Now, the entrance of the idea of *agape* into our discussion leads to our second problem: the source of God's control in creation.

I have been arguing all along that, for Peirce, God was the primary agent in the evolution of the cosmos. I have argued that He works through a special kind of final causality in which an element of chance is involved. The question, then, is in what sense does God control creation if He does not know what He will create until He creates it? In a minimal sense, we might say He controls through His telos. Even in its indeterminateness or non-explicitness, the telos will reject certain qualities, although *we* cannot say what these might be. In general, whatever constitutes a "non-universe" could not be attractive to a God whose telos is a "universe." Such negative control, however, seems exceedingly weak.

Oliver is quite right when he says that Peirce's agapasticism limits the power of reason when it admits chance. Indeed, this, as Peirce pointed out, is the difference between his world and Hegel's: Hegel's world was rational in that it employed "that wooden kind

[of logic or reason] that absolutely constrains a given conclusion" (6.218). Peirce's world, on the other hand, ran according to an inductive or abductive reason which is not so constraining (6.218). Peirce's point was that while reason is limited in his universe, it is not fully curtailed. However, some element must be added which aids in the control of creation--something to fill in where reason is limited: this is precisely the role of *agape*. As Hausman puts it: "Without the principle that love is, there would be nothing operative in the origin and development of the universe which could give it specificity and directed order" [37].

The connection with abduction here is not accidental. We saw above that God must approach the indeterminate qualities somewhat passively; this corresponds to the passiveness I associated with abduction proper and with artistic abduction. Moreover, Peirce acknowledged that God is "mind" or "reason" in some sense by analogy (6.502). And in "Evolutionary Love" he argued that "the first step in the Lamarckian evolution [which he associated with his own agapasticism] of mind is the putting of sundry thoughts into situations in which they are free to play" (6.301) [38]. This is precisely what happens in a radical way in God's approach to the chaos. As Orange points out, Peirce identified reasonableness with the esthetic or creative ideal: "As esthetic ideal, reasonableness is that which is unqualifiedly admirable, the *summum bonum*" [39]. Indeed, in God's creativity scientific and artistic abduction become fused. For while God reasons, His hypotheses, although in need of fulfillment or working out, are in the long run infallible. This is so because they are constitutive, or artistic, rather than analogous; God does not have to match His own thought. It is for this reason that Peirce maintained that God's thought is a poem or picture as well as an argument. To return briefly to our earlier distinction between the two roles of esthetics, we see that the appeal to concrete reasonableness and a *summum bonum* in God's creativity describes the foundational role of esthetics.

While God's *agape* is behind His abductive efforts, it shows itself even more clearly in the move to actuality. Potentialities are

made actual through God's efficient activity which is generally limited by His telos and which is specifically guided by His cherishing love for the ideas which evolve. In the human realm, Peirce said, "The agapastic development of thought is the adoption of certain mental tendencies, not altogether heedlessly, as in tychasm, not quite blindly by the mere force of logic, as in anancasm, but by an immediate attraction for the idea itself, whose nature is divined before the mind possesses it, by the power of sympathy, that is, by virtue of the continuity of mind . . ." (6.307). Thus, Peirce's God initially creates by allowing attractive qualities to evolve under His care. Hausman describes the role of *agape* well:

> The operative principle, agape, is not a power or force that constrains or is constrained by precedented or previously conditioned directions. It is dynamic. But it is permissive [40].

Agape, then, is the principle of control in God's creation of an evolving cosmos. Moreover, in being continuous, it does not end with the actualization of a part of the universe, but follows that part indefinitely as a cherished portion of God's work of art. "It is," said Peirce, "not by dealing out cold justice to the circle of my ideas that I can make them grow, but by cherishing them as I would the flowers in my garden" (6.289). As Orange argues, "Peirce's final view of creation was not merely that of a Plotinian emanation, but something more like the view of Henry James, Sr., that God creates in order to have something to love" [41].

It is thus through *agape* that Peirce answered the potential charge of incompatibility between the reality of chance and the reality of creative control. Oliver, Peirce might have argued, simply asks for too much in asking reason alone to specify the universe in its detail. One might ask, however, why *agape* and not some other form of love? The other form that immediately comes to mind, of course, is eros. Hausman provides one reason why Peirce rejected eros and Peirce himself provided another. The first problem, as Hausman points out, is that eros involves the

achievement of a specifically desired end and therefore "would not allow for a change in the subject as determined by its initial direction" [42]. In other words, eros functions deterministically and therefore cannot perform the mediating function required by creative evolution. In short, eros is incompatible with developmental teleology.

Peirce also rejected eros because it involves self-love. When one functions erotically, one is primarily interested in gratifying one's own desires. And Peirce rejected self-love categorically because, as he put it, it is "no love" (6.287). Self-love, because it disregards or devalues what is created, prohibits what is created from evolving to its own perfection. Thus, as the elder Henry James, whom Peirce in part followed, said, "the very distinction of that Love [creative love], regarded as infinite or pure of all infirmity, is that it is utterly void of self-love . . ." [43]. *Agape*, then, is important for its characteristic of allowing an attractive idea (quality of feeling) to evolve or grow in its own terms while under the guidance of the creator's general telos. It controls creation passively. It is through *agape* that Peirce made sense of the idea that God does not know antecedently the specifics of what He will create.

The final upshot of the role of *agape* should be clear. I mention it because it is crucial for my analogy to human creativity. It is the fact that *agape* controls what Hausman calls a "radical creativity" in which what is created is radically new or original [44]. Even in the early stage of creation, what is created cannot be reduced to antecedents in God's "plan" or to preordained mechanical necessities. *Agape* allows for the spontaneity we discussed earlier and spontaneity allows "the really *sui generis* into the universe" (6.59). As Orange presents it:

> By introducing chance variations, God presents the existing set of facts with new possibilities, and thus God cannot be simply identified with what is. As ideal outcome of evolution, God is more than any world of mere facts, possibilities, or finite minds [45].

Such radical novelty of course does not seem surprising for the original creation of the universe, but it does seem surprising to some when mentioned in relation to human creativity. What we must keep in mind, then, is that for Peirce, spontaneity remained an element throughout the evolution of the universe and was not expended all at once in some initial instant. As Hartshorne puts it, Peirce's view distributed "chance throughout the temporal process, making each event in some slight degree a creative, unpredictable novelty, even from the point of view of ideal knowledge of its antecedents" [46].

This brings us finally to a conclusion of the initial stages of God's creation. God approaches the chaos with *agape* and a general telos of the universe. He allows attractive ideas (qualities) to begin to develop themselves. Thus, He actualizes those potentialities which are admirable in themselves and by virtue of His continuity of mind allows them to develop their own thirdness. As Murphey says, there is "an evolution from Firstness (feeling) through Secondness (actual occurrences which are repeated) to Thirds (laws)" [47]. But again, creation did not end here for Peirce, for God is even now creating the universe.

Developmental Teleology

I have been mentioning throughout this chapter Peirce's notion of developmental teleology and I have described bits and pieces of it. Now, in describing the rest of creative evolution we can further develop Peirce's meaning. As I suggested earlier, evolution involves the contraction of the indeterminateness of God's telos.

God begins by actualizing specific qualities. These constitute the universe at any given time. God, in bringing these qualities into relation, bestows an order on them and thus makes the

universe intelligible or reasonable. It becomes something ordered and therefore something about which mind can think--it becomes a sign. Under God's love, this order begins to repeat itself in specific tendencies and it is thus that laws get developed. Laws simply reflect the habits of activity which the universe takes. In this way, by what Peirce called the crystallization of mind (God's mind) the universe becomes more and more determinate and therefore more and more intelligible in certain respects. Thus, God specifies the universe. "In saying that agape is circular," Hausman points out, "Peirce reminds us that agape introduces direction into the universe. In being permissive, it is not blind" [48].

At the same time, the specification of the universe affects how God's creation proceeds. Peirce worried about discussing God as if we knew that He himself "grows;" nevertheless, he argued, "it will, according to hypothesis [of God's Reality], be less false to speak so than to represent God as purposeless" (6.466). In some sense, then, we can say that God's growth is affected by what He has already created; that is, that His telos or purpose is influenced, though not determined by, the growth of reasonableness at any given time. Thus, as we saw, "Were the ends of a person explicit, there would be no room for development, for growth, for life . . ." (6.157). Through a give and take between what is created and what shall be God and the universe evolve, so that "[i]n the long process of creation God achieves his own being" (MS. 313).

Elements of Peirce's semiotic may be helpful here. Let us view, as Peirce suggested, the world as God's work of art or symbol. We are here dealing with a self-signifying icon at the outset, for there can be no antecedent object to a world which develops spontaneously. Thus, the world signifies itself alone in the most radical sense possible. Now, Peirce argued that meaning or signification is developed for a sign in accord with its reference. In his own terms, indexicality is a necessary condition for meaning and therefore for symbolicity. However, there is at first nothing to which the created world can point except itself or its future self. How, then, can it be indexical? Clearly, the world must create its own referent.

This is not at all farfetched according to Peirce's scheme. First, he acknowledged that continua as well as discrete individuals can be referents (2.306). Thus, a continuous universe may be its own referent as it is projected into its own future. This means too that the referent itself, as a continuum, may grow--it is not fixed. At the same time, the referent is determinative. That is, as the world evolves it prohibits further growth in certain directions--those directions precluded by the parts of the referent which are already fixed. Yet the partial fixity does not prohibit growth in an infinite number of other directions. Peirce maintained that the "depth" or meaning of a symbol is controlled by its "breadth" or reference (MS. 517, p. 19). Thus, in a symbol with multiple referents, the depth is controlled by these. However, in a self-referring symbol such as God's work of art, the depth must be (initially at least) controlled by the internal breadth of its sole referent. And since this breadth is not fully fixed, neither is its consequent depth. Therefore, the meaning of God's telos is precided by the specific actualizations which fix it as its own referent. At the same time, its future meaning remains open in infinite other directions. Thus, understanding God's telos as self-signifying or self-referring might lead us to agree with Orange's claim that in "Peirce's mature view, God is the element of Reason or reasonableness which both expresses itself in creating, and also is emerging in the creative process" [49].

Whether this clarifies the description of the growth of God's telos or makes it appear more confused, it does illustrate that the idea of developmental teleology pervades Peirce's work and is not an isolated attempt to solve an elusive metaphysical problem. Here it applies to the growth of symbols as well as of worlds. And most importantly, in connecting the view that the world is a work of art with Peirce's developmental teleology, we grasp the vague foundations of God's creativity.

A final way of understanding this issue of developmental teleology is to view it psychologically rather than metaphysically or semiotically. Since Peirce was unwilling to grant "consciousness" in a specific sense to God, this is the most delicate as well. I rely here

merely on the Peirce's assertion of personalistic theism; at worst, we can take what follows as a purely descriptive analogy on my part. In this case, we might imagine God in relation to the universe at a particular time. He has a general "heading" concerning what He wants to do. However, this heading is confined somewhat by the state of affairs already at hand. Therefore, whenever a novelty enters the world, it will put some further constraint on God's heading, thus affecting the future of the heading [50]. In other words, the telos cannot remain static, but must grow in accord with the specifications of the universe in its actuality. In an article specifically dealing with Peirce's developmental teleology, Oliver correctly points to this dual nature of development:

> The world must be the product of a method working on stuff, but neither can be conceived as external to the other. The method must emerge from the stuff, and the latter must assume the form which the method imposes on it [51].

This description of developmental teleology leads us to what I believe is one of the most difficult points in Peirce scholarship: that is, is Peirce's universe ultimately open or closed? The point is not irrelevant for our purposes for several reasons. First, our analogy concerning the end of artistic creativity depends upon some view of this issue. Further, the answer to this question weighs heavily in our final description of the general character of the telos of Peirce's God. So far we have suggested that this telos, as "universe," grows in two ways: specifically and generally. Pfeifer develops this point at length:

> The two basic consequences of this evolution [God's creative evolution] are: (1) there will be more regularity because of the appearance of more habits, more connections in the universe; and (2) there will be a greater degree of regularity in two senses: (a) habits will encompass more, and (b) habits will become more rigid.

> If we restate these consequences in terms of ideas, they become: there will be more ideas, and ideas will be more general in that they will encompass more and will be more definite [52].

Using this as a foundation, let us turn to the general features Peirce attributed to God and God's telos or purpose. These, besides providing some answer to the problem at hand, will give us some ground for determining the purpose of creative activity in general.

One thing that is agreed upon is that the nature of the telos of the universe does involve "reason" in some way. The question is, in what way? I have ignored the half-hidden references to the categoriology throughout my discussion of creative evolution and now is perhaps a good time to let them surface. As we saw, from our perspective, evolution is a process developing from the vague to the definite, from the chaotic to the orderly, or as Murphey argues, from firstness, through secondness, to thirdness. As Orange holds in reference to Peirce's 1910 "Additament" to the "Neglected Argument," "it seems that the organic metaphor of growth--from chaos to cosmos--is at the very heart of Peirce's argument" [53].

The evolving universe is the growth of concrete reasonableness guided by the ideals of the normative sciences. The question is whether Peirce viewed the end of the universe as reason fully concretized; that is, were the *summum bonum*, God, and concrete reasonableness merely names for some static final cause or telos? As Orange suggests, if this was the case, Peirce did nothing but provide another instance of the traditional design argument. However, she quickly points to an interpretation which frees him of this charge:

> Or perhaps he thought "reasonableness," especially since it is admittedly only gradually emerging, did not require that the order of nature be perfect but only that it be developing, manifesting a tendency toward ends. His theory would thus escape Hume's critique. Surely Peirce's God is not a blueprint maker, but rather is the design creating itself in the universe [54].

Orange's description aptly marks my repeated claim that Peirce's God does not know beforehand precisely what He will create--He is the design creating itself. Nevertheless, Peirce needed to separate more clearly his position from that of mechanical teleology. As Orange adds, "it would surely have helped if Peirce had enlightened us further on these matters" [55]. Let me then try to defend Orange's claim above by working through the difficulty of the growth of reasonableness.

The difficulty stems from several passages in Peirce's work and at 6.33 Peirce stated it concisely. Once again, we must keep in mind Peirce's later, more definite theistic claims and his 1892-93 *Monist* series on cosmology. Concerning his account of evolution Peirce said:

> It would suppose that in the beginning--infinitely remote--there was a chaos of unpersonalized feeling, which being without connection or regularity would properly be without existence. This feeling, sporting here and there in pure arbitrariness, would have started the germ of a generalizing tendency. Its other sportings would be evanescent, but this would have a growing virtue. Thus, the tendency to habit would be started; and from this, with the other principles of evolution, all the regularities of the universe would be evolved. At any time, however, an element of pure chance survives and will remain until the world becomes an absolutely perfect, rational, and symmetrical system, in which mind is at last crystallized in the infinitely distant future.

The argument for a closed Peircean universe is clearly derivable from the final sentence in which Peirce suggested, by "until," that the world will become "an absolutely perfect, rational, and symmetrical system, in which mind is crystallized in the infinitely distant future" (6.33). This is the state of God completely revealed which we mentioned earlier: it is "the end of things" which for Peirce was isolated, or unlocated, secondness (6.32). Reason, on this view, is fully static or concrete. Here Peirce

clearly allowed for the interpretation that his evolving universe will come to an end--that growth is limited.

One way to attack such an interpretation is to point out that the supposed "end" is in the "infinitely distant future" and therefore cannot be reached. While I do think this was Peirce's intended meaning, I think the claim needs to be supported in other ways. First, Peirce used "infinite" in both logical and metaphysical senses and it is not certain what he had in mind here. That is, Peirce did believe certain kinds of infinites could be traversed, as for example Achilles's ability to overtake the tortoise (6.179). This at least allows for an end in infinity to be reachable. Secondly, Peirce talked about the origin of the universe as being "infinitely remote," and yet he supposed that origin, as we have seen, to be real. While I think this difficulty is resolvable through Peirce's distinctions between reality and existence and between the needs of pure firstness and those of pure secondness, it is nevertheless an objection which may be raised at this point.

Apart from a few other passages which can be read in support of this closed interpretation of 6.33, the most important evidence for such a view are Peirce's ubiquitous claims for increased order and regularity in the universe. Such claims cannot be rejected, but they must be understood within the whole of Peirce's thought. Thus, as Goudge mentions, "The cosmos is proceeding uniformly in the direction of greater and greater order" [56]. This is accurate, but potentially misleading. What is misleading about it is that because the universe begins with an original chaos of firstness, *any* increase in order leads to a world more orderly than what preceded. It does not follow that spontaneity is ordered out of the universe. On the contrary, as we saw, the original infinite potentiality remains regardless of how much the world is ordered or regularized. Increasing regularity cannot preclude increasing diversity. As Orange argues, "Reasonableness, paradoxically, has the dual function of settling things--beliefs, habits, laws of nature--and of unsettling them. Both functions are, for Peirce, creative" [57]. Now, what I want to try to show, as a way of elaborating on Orange's claim, is that for Peirce both regularity and diversity

increase.

Many Peirce scholars do argue that Peirce views the universe as ultimately open [58]. I want here to present several reasons for adopting this view with regard to Peirce's creative evolution as a whole. First, I want to argue that Peirce's God could not know when He was finished with His creative work. This problem is suggested by Peirce's claim that while the universe is a poem, it may not make an exact poem (6.399, see also MS. 289). This is because it always has potential for further growth. To know He was finished, God would need a definite telos against which to measure His creative work. To be sure, His esthetic perfection allows Him to know what is *kalos* or admirable in itself and therefore certain aspects of His creation may be finished at any particular time. But in a developmental teleology the universe as a whole cannot be closed off by its esthetic goodness; the goodness does not present a definite state of closure as would a definite telos. Peirce's entire attack on necessitarianism pushes this point [59].

Moreover, there is a certain inconsistency in Peirce's system in the idea that "God revealed is absolute secondness." One side of this problem I suggested above: that is, for Peirce, secondness was both relation and existence. Therefore, while we can maintain that for Peirce pure firstness is "outside" or "before" time, we cannot do the same for pure secondness. For Peirce, the otherness of secondness presupposes time--existence is temporal. But time, as a continuum, is, according to Peirce, dependent on thirdness or mind. It follows, then, that pure secondness cannot be a real, but only an ideal state of the universe. Death is a regulative limit for creative evolution; it is not a state in which evolution can actually end: "at any assignable date in the past, however early, there was already some tendency toward uniformity; and at any assignable date in the future there will be some slight aberrancy from law" (1.409).

Another way of pointing out this problem is in terms of revelation. Simply put, it is not possible through the Peircean categories to "reveal" pure secondness. If secondness is the final state, there is no sense in which it is the final state to, for, or by any mind, since no mind is left in pure secondness (See 6.23).

Thus, God revealed is not revealed. I do not intend here a mere play on words. It is a real problem in Peirce's system, for, as Potter argues, "the law of mind cannot be self-destructive (6.148), for if it were, the very growth of concrete reasonableness would be its undoing" [60].

Murphey suggests a related point in urging the importance of synechism in Peirce's system. First, he points to Peirce's definition in which "any true continuum must contain potentialities which are not only not now actualized but which are greater in multitude than any set of events which can ever be actualized" [61]. Then, he argues, "Peirce holds that we must assume all things to be continuous until reason be found for the contrary assumption, and that no such reason can ever be found" [62]. The upshot, of course, is that any state or stage of the universe in evolution is continuous in that it holds infinite potentiality for further development. Therefore, unlike systems of absolute idealism or mechanistic necessitarianism, Peirce's world can never fully crystallize; it cannot reach an end of ends.

These arguments which turn on the internal consistency of Peirce's system are important, but in the end they are not nearly as convincing as Peirce's direct statements. In 1903, while enumerating the various ways of seeing uniformity in nature, Peirce explicitly identified his own position: "The party of D's of which I am myself a member, holds that uniformities are never absolutley exact, so that the variety of the universe is forever increasing" (6.91). If we tie this together with Peirce's other claims, we see that there is always an element of chance in the universe, because there is always an element of potentiality. Indeed, there is not only the original potentiality which is never finished, but there are the new potentialities which arise in connection with the "what is" at any stage of evolution--new growth increases potentiality as well as actuality [63]. Thus it is that Peirce argued that the Platonic world itself increases (6.194). At the same time, there is still growing order and regularity in the universe.

In terms of rationality or reasonableness, this means that God's telos is not static, absolute reason, but the very growth of

reasonableness itself. The *summum bonum* which God is creating as "universe" is not this or that particular end, but growth itself; as Pfeifer says, "The summum bonum is the evolution of reason; God is reason governing the universe" [64]. "What is Reason," Peirce asked. "In the first place," he answered, "it is something that never can have been completely embodied;" it "always must be in a state of incipiency, of growth" (1.615). Once again, agapasticism mediates between chance and necessity. It allows for the constant element of chance in the universe and at the same time increases law and regularity towards a constraining necessity. Yet, neither chance nor necessity is effective: God is. God allows His ideas to grow more and more intelligible and this very growth is His telos in general. It is a denial of what William James called a "block universe." This is the esthetic ideal toward which God creates. As Peirce held:

> I do not see how one can have a more satisfying ideal of the admirable than the development of Reason so understood. The one thing whose admirableness is not due to an ulterior reason is Reason itself comprehended in all its fullness, so far as we can comprehend it (1.615).

In defining God's telos as the growth of reasonableness Peirce decidedly left the universe, as a work of art, open-ended. At any point it may be a fine work of art, but there is always room for advance. The referent which God's work of art creates for itself is open to the future. The creative process, then, does not have an "end" proper, though it does have an ideal in the *general* notion of reason [65]. Thus, as Apel argues:

> Peirce is able in this way to uphold simultaneously, without becoming involved in a contradiction, a theory of creative life's 'emancipation from law' (e.g., 6.266) and a theory of rationalization and even personalization of the universe by habit-taking (6.268 ff.) [66].

This closes my discussion of Peirce's account of God as

creator and evolution as creation. While the topic is clearly a difficult one, it seems to me that the salient features of God's creativity emerge: agapism, chance, developmental teleology, and the open-endedness of the universe. Orange's summation is helpful: "Creation is the gradual progess, by means of sporting variation and of the tendency toward habit-taking, from chaotic nothingness to concrete reasonableness, the *summum bonum*" [67]. The point at issue is to find some understanding of what Peirce might have meant by artistic creativity. Therefore, the exposition here is an exposition of an element of Peirce's system which, I think, can help us find such an understanding of creativity. As I argued at the outset, it is a regulative analogue insofar as for Peirce God was the creator *par excellence* whose work can be understood as a work of art. Therefore, the analogy I draw from it will not merely be descriptive of Peircean psychology, but will be able to be tied justifiably to my first analogy which was a normative account of Peircean creativity. That is, the two analogies together provide at least an introductory view into how, for Peirce, creativity ought, in a general way, to be conducted.

Chapter 5
ARTISTIC CREATIVITY AS CREATIVE EVOLUTION

> As for the ultimate purpose of thought, which must be the purpose of everything, it is beyond human comprehension; but according to the stage of approach which my thought has made to it--with aid from many persons, among whom I may mention Royce (in his *World and Individual*), Schiller (in his *Riddles of the Sphinx*) as well, by the way, as the famous poet (in his *Aesthetische Briefe*), Henry James the elder (in his *Substance and Shadow* and in his conversations), together with Swedenborg himself--it is by the indefinite replication of self-control upon self-control that the *vir* is begotten, and by action, through thought, he grows an esthetic ideal, not for the behoof of his own poor noddle merely, but as the share which God permits him to have in the work of creation (5.402, n. 3, 1906).

> I look upon creation as going on and I believe such vague idea as we can have of the power of creation is best identified with the idea of theism. So then the ideal would be to be fulfilling our appropriate offices in the work of creation (8.138, n. 4).

The Analogy

Within philosophy it is a rarity to find an analogy that argues from God to man. From Hesiod to the present, most arguments have been just the reverse. However, what I propose here is an argument from God to man: man creates like God creates. Yet,

my proposal is not as odd as might appear because I am arguing within the context of another philosopher's system. Indeed, Peirce worked the analogy between God and man in the standard way. He maintained that the anthropomorphizing of God, although (or perhaps because) it led to a vague conception, was indeed the only way we have to talk about God. In a letter to William James in 1905, he said, "To Schiller's [F.C.S] anthropomorphism I subscribe in the main. And in particular if it implies *theism*, I am an anthropomorphist" (8.262). Thus, when I make my analogy from God to man within Peirce's system, I am not arguing that we know God better and therefore can argue backwards to man. Rather, I am arguing that we get a better picture of what Peirce meant by creativity through his discussions of God than we do through his discussions of man. Peirce did not develop the idea of human artistic creativity at any length. Therefore, my analogy is not so much from God to man as it is from Peirce's God to Peirce's man, and the distinction is an important one.

That my analogy is justified, in general, should be evident. If, as Peirce claimed, he anthropomorphized his description of God, then God's creativity should correspond to an implicit view of human creativity. Specifically, the analogy seems appropriate because Peirce often referred to God as an architect. While architecture seems the closest of the arts to science and mathematics, it is nevertheless an art. Indeed, insofar as we argued earlier that in God science and art are fused, the analogy to architecture seems most appropriate. What we need to do, then, is simply to see what differences there are between God and man. With regard to artistic creativity, this is what this chapter sets out to do. I argued at the close of the last chapter for the normative aspects of God's creativity. This allows me, I think, to bring together this second analogy with my first. Therefore, I shall do precisely that as I proceed through this analogy. We should, then, finish this chapter with a full view of Peircean creativity, though of course not the final opinion on the matter.

One problem remains at the outset of our analogy and I think it is a problem which is difficult to answer. It is the problem of

how man can have free-will in a universe created by God. Such freedom is of utmost necessity if Peirce is to talk about, as he did, the responsibilities of art, ethics, and logic. It is clear of course that Peirce did defend such freedom in his attacks on determinism. Moreover, his agapasticism set out, as we saw above, to project "creations into independency" as well as to draw "them into harmony" (6.288). Peirce did not say specifically how man can be creative if all is ultimately dependent on God's creation, but this is the position he took. Somehow, through His *agape*, God creates persons who then create on their own, though within the context of God's creation, parts of the evolving universe. The relationship between persons and God is thus one of both dependence and independence. Peirce described it somewhat cryptically:

> In general, God is perpetually creating us, that is developing our real manhood, our spiritual reality. Like a good teacher, He is engaged in detaching us from a False dependence upon Him (6.507).

Man therefore has freedom to create and thus can be responsible, though he depends on God for his freedom. As Murphey states it: "In a quite literal sense, then, each man has a part to play in the development of the universal mind" [1].

Abduction: The Inception of Creativity

Let us begin by taking the abductive stage of artistic creativity which was developed in Chapter 3 as an outline for further development. There I argued that artistic abduction involves a cognitive control over qualities of feeling, a free play of ideas through imagination, and a certain amount of surprise, of spontaneity, in the inception of the created idea. Like a scientist,

an artist begins abduction by opening himself to possibilities. However, unlike scientific hypotheses, these are not possible answers to scientific questions, but are answers to our artistic desire--what I have called, in its appropriate vagueness, an "uneasiness" of the creator. The artist's avenue to these possibilities was, as we saw, through unrestricted imagination which allows ideas to play randomly. Now, this beginning is supported by our second analogy insofar as God Himself is open to the real vagues of the original chaos; God allows these vagues, as qualities of feeling, to play freely before Him. By comparison, then, an artistic creator, through imagination, must let ideas play freely before him. However, two differences are entailed by his finitude.

First, the ontological status of what is present for a finite creator is different from that which is present for God. Peirce, as we saw earlier, held that artists are concerned with qualities of feeling primarily (1.43). Now, insofar as these turn out to be firsts for man, these qualities of feelings constitute an imaginative chaos comparable to God's chaos of pure firsts. Peirce borrowed his notion of "feeling" from Kant who in turn follows "his master Tetens:"

> Take whatever is directly and immediately in consciousness at any instant, just as it is, without regard to what it signifies, to what its parts are, to what causes it, or any of its relations to anything else, and that is what Tetens means by Feeling; and I shall invariably use the word in that same sense (7.540).

Taken in themselves, then, feelings were for Peirce real firsts without relation internally or externally. Peirce gave several examples of feelings as sensations and emotions but pointed out that his description, in being semiotic, could not do the feelings themselves justice. For:

> the consciousness of a moment [a feeling] as it is in that very moment is not reflected upon, and not pulled to pieces. As it is in that very moment, all these elements

> of feelings are together and they are one undivided feeling without parts (7.540).

The import is that the qualities of feeling, so far as we know them or think about them, are only firsts of thirds; we must present them to ourselves as signs, but as signs of firsts. Therefore, an artist's chaos of firsts is a chaos of indeterminate signs which present qualities of feeling--they are ideas of firsts. The indeterminateness follows specifically since, in being phenomena for us, these qualities must correspond with Peirce's Kainopythagorean categories or categories of consciousness of which the firsts are feelings which are inherently vague (1.350). Thus, an artist's well of feelings (out-of-whiches) parallels God's original chaos, but in relation to the artist, as a finite being, it is distinguished by its semiotic limitations.

One difficulty in using the term "idea of a feeling" in this context is that it suggests the possibility of works of art being true by correspondence, of being thoroughly imitative. This, however, is not what Peirce intended. For Peirce, artists do show insights into the human condition, but they do so by presenting novelty. They present in signs, original qualities which, so far as they are true, are true only as self-adequate. Yet, a work of art's parts may exhibit truths of correspondence. For example, someone who knew the model for *Mona Lisa* might have said that the portrait truly expressed her character or physical form. However, as an icon, *Mona Lisa* presents its own total quality of feeling which, though affected by its parts, is other than them and is novel as an existent in the world. In this way, a work of art can only be true to itself--it can only be judged as to the intelligibility of its own presentation. Feelings are not fully realized antecedent objects, but are indeterminate teloi which evolve in works of art.

The second difference between a finite creator and God is that a finite creator's scope is norrower than that of God. On the one hand, we saw that artistic imagination is freer than scientific imagination. On the other hand, artistic imagination is limited by an artist's funded experience, confinement in time, and perhaps, for

Peirce, talent for imagining. Therefore, while an artist may have an infinity of potential qualities in imagination, it is an infinity smaller or less inclusive than that available to God by virtue of the artist's relative finitude to God. This is not a surprising difference, but one we ought to keep in mind.

A second point which allows us to draw the two analogies together is the role of imagination. Artistic imagination is in a sense actively passive. On the one hand, it brings ideas before an artist's mind and is in this much actively controlled by the artist. On the other hand, it allows these ideas to mix and pass before the mind as they will. In this way it is passive. It is under control in one sense, but out of control in another. This is why Peirce called it "fancy" (5.490). It is also why he distinguished it from teleological thought and mere hallucination. Thought is fully controlled and hallucination is entirely out of control. Thus, an artist's approach to his initial ideas is similar to God's "esthetic mood" which, as we saw, is active and passive in a similar way.

In starting abduction with an indeterminate or indefinite telos an artist once again resembles God. God's work of art is initially indefinite and so is an artist's imagined quality of feeling. As just argued, the qualities are vague or indefinite because they are of feelings and feelings are inherently vague. In addition, an artist approaches his initial play of ideas with an indeterminate telos, just as God approaches the chaos with an indeterminate telos. Peirce himself stated the comparison in reverse order:

> We can hardly but suppose that those sense-qualities that we now experience, colors, odors, sounds, feelings of every description, loves, griefs, surprise, are but the relics of an ancient ruined continuum of qualities, like a few columns standing here and there in testimony that here some old-world forum with its basilica and temples had once made a magnificent *ensemble*. And just as that forum, before it was actually built, had had a vague underexistence in the mind of him who planned its construction, so too the cosmos of sense-qualities, which I would have you to suppose in some early stage of being

> was as real as your personal life is this minute, had in an antecedent stage of development a vaguer being, before the relations of its dimensions became definite and contracted (6.197).

There is a temptation here to equate this "vague underexistence" or telos with the artistic "hypothesis" of artistic abduction. In one sense, this is correct because truth in art is a self-adequacy; that is, the telos is its own solution. But this very point lets us see that the indeterminacy of the telos is also the problem that needs to be solved by the artist. It is the source of uneasiness and is therefore prior to a hypothesis. The telos is problematic because it is indeterminate; its solution is its "embodiment." In other words, an artist begins by wanting to create something but without knowing what that something is--it is an indeterminate "such." This corresponds to the initial telos of God; however, its problematic nature derives from its relation with the abductive stage of finite creativity. For God, nothing is problematic in quite the same sense. Once again, human finitude and especially fallibility, of which I shall say more later, point out a difference between the analogues. In making this point, I leave the idea of an artistic hypothesis vague; I shall say a bit more about it below.

Clearly, then, I want to argue that artistic creativity, like God's creation, is teleological by way of a developmental teleology or creative evolution. Just as with God, an artist begins creative activity with an indefinite heading as to where he wants to go. The rest of the process is then directed toward following the heading and clarifying it in an existent creation. Thus, an artist's work of art is an embodied feeling. However, before we develop the obvious comparisons, we must first look at the role of chance and spontaneity in artistic creativity, since this role occurs in the abductive stage. My claim, then, is that because there is a passive side to the beginning of creativity, chance must play some role just as it does at the cosmic level.

The Role of Chance

I understand chance to have the same role in human artistic creativity that it plays in God's creativity, because there is no reason to suppose a difference. To be sure, the random "realm" with which chance has to work in finite creativity is a smaller one, as I argued above. But this does not detract from the reality of chance in the least. Once again, then, chance occurs in accord with the activity of a free will. This means that an artist "could have done otherwise than he did," not in the sense that he could have denied what he chose, but that something equally esthetically insistent might have been chosen. In short, more than one future might solve an artist's telos at its inception, just as more than one universe might fill God's desire. As Isabel Stearns says of Peirce's idea of final causation: "It can permit of alternative instantiations, and still realize its end; there is room for a margin of variation in the way in which it operates" [2]. We can account for this world or this work of art, but we cannot argue that it is necessary without falling back into a deterministic view of the world.

Such a view will bother anyone who wants to maintain that only one particular work of art can satisfy an artist's uneasiness about the indeterminacy of his telos. The fear is that a work of art will lose its value and uniqueness if it alone is not *the* answer. On this fear, I have several points. First, a work of art, once created, still retains its novelty as a being in the world; it is *sui generis.* This of course is because it is a specified "this such" and not an indeterminate "such"--it is true to itself as no other idea can be true to it and thus it is unique in the only way that matters for a work of art. As for its value, whatever a work of art is, to be good for Peirce it must be *kalos* so far as our finite judgment allows us to tell. Ideally, of course, it will be *kalos* for an infinite community in an infinite time. Now, a work of art need not lose it *kalosness* because it had potential competition for specifying an indefinite telos. For Peirce, there was no connection between the two points,

unless it be through the novelty just discussed; and that, as we saw, is not an issue in this case.

Finally, those who harbor this fear might argue that they see a certain necessity in creativity as, for example, when an artist chooses a particular line and brush stroke. On the one hand, if this "seen necessity" is fully teleological, then it is deterministic and denies creativity. On the other hand, there is a certain sense in which "necessity" grows as a work of art grows. That is, as we saw with God's creation, when a telos gets specified and made precise, certain future options are closed off. Those aspects of a work which are already specified will prohibit growth in certain directions. This indeed is a move toward determinateness in creative activity, but it does not fully close off options until an artist deems a work "finished." And even then, unless we take a deterministic stance, we cannot say that a work of art is complete in any final sense any more than, for Peirce, a scientist can say with certainty that he holds the final opinion of the truth. Thus, the upshots of the role of chance in creativity as creative evolution are not as troublesome as they might at first appear.

So chance plays the role of letting arise spontaneously what first appears to solve an artist's problematic telos. As Peirce argued: "Such definite potentiality can emerge from the indefinite potentiality only by its own vital Firstness and spontaneity" (6.198). This is the artistic version of the abductive "flash of insight." From the free play of ideas one "quality" stands forth as an attractive instantiation of the indefinite telos. It is here that we see the "hypothetical" aspect of the telos; the first instantiations which will make it self-adequate are its hypotheses. I use "quality" here in a loose sense, because for Peirce firsts arise in combination and relation. Therefore, the attractive quality may be a unification of relations of other qualities. Thus indeed an artist, like a scientist or geometer, "is able to synthesize and show relations between elements which before seemed to have no necessary connection" (1.383). And, though Peirce denied knowledge of "exactly *what* it is," he held that the quality of a feeling was put forth by an artist semiotically as "a Feeling that one can comprehend" (5.113).

Once again, the parallel to God's creativity seems straightforward. An artist's telos is first delimited by the spontaneous arising of an attractive idea of a quality of feeling. Now, spontaneity, which is the active side of chance, is the essence of mental activity (6.148). But this presents us with a problem for speculative psychology. We want to know where such spontaneity occurs. Spontaneity presupposes a rational discontinuity in the creative act between the beginning and the outcome. This indeed is the point of Peirce's developmental teleology. Although a full description of spontaneity would destroy the spontaneity itself, there is a suggestion in Peirce's writing which at least provides room for discontinuity in experience. As an artist creates, he submerges himself in the experience; thus, "[t]he poetic mood approaches the state in which the present appears as it is present" (5.44).

This of course agrees with Peirce's correlation of feeling and art which we have emphasized throughout, for an artist gets as close to firstness as the thirdness of consciousness allows. For our present psychological concern this means that an artist allows himself, as I discussed in the normative claims, to be partly out of control in attempting to catch the uncatchable present. The "present-ness" of the inception of creativity--even if it extends through time--provides a psychological haven for the discontinuity of experience. Peirce confirmed this disruptive characteristic of the present when he argued that "time has a point of discontinuity at the present" (6.87). The "discontinuity appears . . . where the past is broken off from the future as it is in our consciousness" (6.87). As I stated in my introduction, for Peirce, the future was open and the past closed. This is certainly no surprise once we have understood the import of creative evolution and developmental teleology, and requires no lengthy explanation. Nevertheless, we should examine the limits of Peirce's remarks.

Peirce neglected the notion of time much as he did esthetics. This appears to be because he held time to be derivative rather than constitutive of the universe; that is, time is a created continuum, dependent both on God's continuity and the continuity

of God's creations. In any event, "the mode of the Past is that of Actuality" and "Nothing of the sort is true of the Future, to encompass the understanding of which it is indispensable that the reader should divest himself of his Necessitarianism . . ." (5.459). Thus, time exhibits the attributes of creative evolution; indeed, while God is not "in time" His creativity depends on it insofar as it coincides with it. *A fortiori*, time, even if ontologically derivative, is crucial for creativity which is controlled by a finite being in time. The past is the universe specified and precided; the future is the creator's telos in relation to the past. Now, as I tried to show in the previous chapter, according to Peirce, "the Past really acts upon us, and *that* it does, not at all in the way in which a Law or Principle influences us, but precisely as an existent object" (5.459). The universe, as a work of art, at any point in its evolution affects what its own future will be to some degree, but it does not entail any specific future. At the same time, the future acts on us through the heading of the telos.

Nevertheless, the important aspect of time for artistic creativity is the present. It is here that in relation to the past we attempt to control the future (5.461) [3]. Peirce said that the present "is so inscrutable that I wonder whether no sceptic has ever attacked its reality" (5.459). Still, so far as it can be understood, the present is the point of discontinuity between what is and what will be. It allows for novelty though it does not necessitate it; and it is characteristic of an artist's psychological state in creating. As Peirce put it: "the 'living present,' as we say, this instant when all hopes and fears concerning it come to their end, this living Death in which we are born anew. It is plainly that Nascent State between the Determinate and the Indeterminate that was noticed above" (5.459) [4]. Therefore, it is not only true that artists do approach a psychological state of present-ness, but it is also true that creativity demands such an approach under Peirce's system.

While the idea of the present helps us descriptively at this point in locating discontinuity, we must be careful not to go too far. Just as with God, such discontinuity allows us to say that a finite creator does not know precisely what he is going to create

until he creates it [5]. Again, the problem is that in allowing for rational discontinuity we make artistic creativity seem as if it is not under the control of the artist, in which case, on Peirce's own view, it would be absurd to evaluate the work as artistic. Wherein, then, does artistic control lie? We saw with God that the problem is solved by showing the discontinuity to appear against a background continuum which holds the discontinuous elements together. It is in this spirit that Peirce argued that the discontinuity which the present allows does not result in "an utter, complete independence" of the dissected elements, but in an "absolute independence in certain respects" (6.86). This means that an artist may create a radically novel work of art, but this work of art will still be related to the past in many ways, though it is not reducible to any set of specific antecedent conditions. Specifically, then, how did Peirce account for this discontinuity of the present in creativity? What lies behind it which allows us to call it creativity rather than an event of pure chance? Carl Hausman provides the Peircean answer: that, for Peirce, "specific instances of spontaneity can be the responsibility of an operative principle, agape, which specifically functions creatively" [6].

The Role of Agape

One might want to argue that Peirce's principle of cosmic *agape*, or the continuity of God's mind, precludes any need for another continuum constituted by a finite creator. God's *agape* would thus suffice for Rembrandt's control over the outcome of the *Night Watch*. The obvious problem here is the denial of the artist's freedom, which Peirce explicitly rejected. As we argued, for Peirce, human creativity was dependent on God's *agape* in a secondary sense so far as God creates man. However, God sends His creations into independence, and free will is a fundamental characteristic of

the world we know. Therefore, for an artist to control his work, in any meaningful sense of the word "control," he must control through his love of the idea by letting it evolve. Indeed, it was clearly from human activity, both scientific and artistic, that Peirce obtained his notion of the efficacy of *agape*. Let us, then, approach this aspect of artistic creativity through Hausman's article, since he is the only one so far to have made explicit a connection between Peirce's use of *agape* and artistic creativity.

Hausman's article is, I think, insightful. He shows how Peircean *agape* can be applied to artistic creativity so far as it brings valuably novel things into the world. Their novelty stems from their not being reducible to antecedent conditions. Most importantly, Hausman points out how "Peirce's notion of agape offers a conceptual frame for articulating, if not resolving" the paradox of radical creativity; that is, the paradox that an intelligible work of art results from a process which begins with spontaneity [7]. This role of *agape* worked for Peirce at both the cosmic and human levels. We have developed thoroughly the role of *agape* in the previous chapter, but I shall briefly recast it here in terms of finite artistic creativity. With this description in mind, then, I want to examine an important difference and an important similarity between finite and infinite creativity.

Agape fills two related roles in artistic creativity. It provides the continuity of mind against which a new idea can arise to begin to focus an artist's indeterminate telos. Secondly, it gives an artist a means of control over his work; as Hausman says, "The subject as well as telos bears responsibility for the change [in creative evolution]" [8]. *Agape* thus mediates for creativity between purely tychistic and anancistic processes which Peirce saw as the traditional alternatives. An artist loves his idea and develops it by letting it suggest its own perfection. Hausman puts it well: "Instead, it [the subject] offers itself by permitting its creation to grow in its own terms. Thus, paradoxically, in offering itself, it generates the excellence which, out of agape it gives to its creature" [9]. In this way, the role of *agape* does not end with the inception of creativity, but continues throughout the development of a work

of art until an artist decides the work is finished. *Agape* thus pervades artistic creativity in its entirety: in all three stages of the process.

Now, I think there is an important difference between God's *agape* and that of a human artist: this is the difference in the scope of the objects of *agape*. God's *agape* fills the universe and pervades what order and harmony there is. An artist's *agape*, on the other hand, is directed to a specific element of the universe--it provides the intelligibility and harmony for a single work of art. In this, I agree with Hausman when he says:

> The order, the valuable novelty, for which the finite creator is responsible is not general harmony, but a specific order, and an order that may, in the context of what is finite, stand in disharmony with its past [10].

In this connection, Hausman mentions another difference. That is, whereas God, in His perfection, can maintain a purely agapastic frame of mind, artists, in their finitude, often infect creativity with eros. In short, artistic creativity sometimes aims to fulfill the artist as well as or instead of the telos. When this happens, the process shades toward determinism and loses its creative aspect. As Hausman argues:

> In particular, the artist is often said to be compelled to work because he recognizes and finds irresistible an envisaged result, however vague and puzzling that result might seem when he begins to create. And when he achieves the result, he is overcome with a joy like the joy of consummated love [11].

Thus, the artist is satisfied, but he has not necessarily satisfied the needs of the work itself. While this points to a factual distinction between the work of man and that of God, Hausman and Peirce agree that the normative aim of artistic creativity is to overcome eros, to become purely agapastic--in short, to be like God.

This leads us to the similarity between the finite and the

infinite roles of *agape*. That is, both God and finite creators, insofar as they are agapastic, create works which are essentially novel. *Agape*, in holding together the discontinuity of creativity, allows the work of a human creator to be every bit as novel as God's work. If such novelty were lacking, works of art would not be creations, but representations or imitations. Thus, just as with God's work, an artist's creation is *sui generis* when created. It is both an individual and a class: a "this such" and a "such." As we shall see below, this is why creative evolution can affect both the specification and the precision of a creation. If we look back to the second chapter, we see that it is this ontological status of a work of art which necessitates its metaphorical nature as a self-representational sign. In being *sui generis*, a work of art can only refer to itself; it can only have, as we saw, an immediate, emotional interpretant. Thus, in the novelty proper of artistic creations, the metaphysical and semiotic features of Peirce's view of a work of art come together. *Agape* is what makes an artist like God; it is the key to performing what Peirce called "our share" in the work of creation. In this much, it is what makes works of art every bit as "created" as primordial matter itself.

The similarities and differences I have presented here and in the preceding sections help us get a firmer grasp of what Peirce meant by artistic creativity. They allow us to fill out the skeleton of artistic abduction with which we began. Now, since, as I argued, *agape* plays a role throughout the creative process, it provides us a way of moving from this description of artistic abduction to talk of the later stages of creativity. Let us, therefore, take up the problem of artistic deduction.

Artistic Deduction

The second stage of artistic creativity I shall call the "deductive" stage. While the title may seem misleading, I intend it analogically; artistic creativity is not deductive in a strict logical

sense, but in a methodological sense. As a normative method, artistic deduction fills two functions: it clarifies an artist's telos as the telos becomes an existent work of art and it projects different possibilities for the indeterminate telos of the abductive stage. In short, this stage represents the evolutionary growth of a work of art as an instance of developmental teleology.

Before describing this stage of creativity, we must point out another result of a difference between God and finite creators which we examined in the previous section: the difference between God's infallibility and man's fallibility. Because of God's infallibility, at least with reference to what He knows, we saw no truly deductive stage in our account of His creative work; he precided His work, but He had no reason to project. God's act of preciding was simply His instantiation of various possibilities. He, as we said, brings qualities into relation as actualities and begins to determine the order of the universe. However, in His esthetic perfection God cannot fail in producing what will be esthetically, morally, and logically good in the infinite long run. Thus, He has no need to project possibilities to examine their likelihood of success; He needs not, at least for the same reasons as finite beings, make real or mental models of what He might want to create, for whatever He creates must be successful.

A human artist, on the other hand, begins with an indeterminate abduction which may not fulfill the telos in the long run; that is, it may fail in its mission to embody a quality of feeling in an esthetically valuable way. This, of course, parallels a scientist's fallibility. Therefore, the deductive stage is critical for artistic creativity insofar as it allows an artist to narrow his work of art and telos into something which has a chance of success. Projection thus is essential for man.

Now, projection can occur in several ways. First, as with a scientist who draws a mental picture of his hypothesis, an artist may picture possible developments of his work of art mentally. Peirce knew a painter who worked this way. This artist "always saw the picture he was about to paint on the curtain by the side of the easel . . ." (MS. 309, p. 42.). Secondly, as we saw in Chapter 3,

an artist might construct general models as an architect does. And lastly, an artist might actually construct or make the work of art as his projection. He might let the picture build as it goes. Peirce's view can accept any one of these methods as long as projection is carried out as a pre-test and is not deterministic. The task of projection, as thus outlined, is negative for the most part rather than directly positive.

In science deduction sets up ways in which a hypothesis can be tested; it predicts certain consequences. Should deduction show an inconsistency inherent in a hypothesis, then the hypothesis can be eliminated or adjusted even before inductive testing begins. Now, artistic deduction cannot in a strict sense predict consequences from its abductive beginning because a work of art, unlike a scientific hypothesis, is isolated; it does not effect or affect change in other things. Therefore, projection's primary purpose is to eliminate possibilities which will not fulfill the telos. This is its negative function. When an architect makes a model, it is used for him to judge whether or not what he wants to create will be esthetically *kalos*. If his answer is negative, he must find a new tack. If his answer is affirmative (though still fallible), then he may proceed to actualize his work of art, to embody a quality of feeling in a sign.

Now, before moving to the preciding aspect of the deductive stage, I must point out what I hope is already obvious. That is, the stages of artistic creativity are not only continuous, but must, as composing a real method, overlap and intertwine. As we saw, Peirce admitted such intermingling in his account of scientific inquiry. In art, this is especially true of the inductive and deductive stages. An artist does not do all his projecting and testing in a single step. Rather, he projects something and tests it; and so on back and forth. It is by this movement back and forth that a work of art grows or evolves. This does not mean, however, that Peirce's divisions are irrelevant, for any particular inductive test must be preceded by an abductive and a deductive phase. Moreover, as with science, in the overall process inductive testing must always be the final stage. Thus, Peirce's ordering is

important, though it is not intended to preclude the intermingling of the stages. I enter this point here so that my examples shall not appear to misconstrue my own development of Peirce's position. Thus, when I talk above about an artist testing a projection within my discussion of the deductive stage, I am not contradicting the order of the stages as Peirce saw it.

I promised in Chapter 3 to say more about what I called artistic preciding and why I thought it a necessary part of this stage of creativity. My first defense rests on my analogy to Peirce's God who, in the middle, actual stage of the universe's evolution, is continually, by creation, making His telos more specific. Therefore, so far as the deductive stage of creativity mediates between abduction and induction, an artist should here make his work of art more definite. This of course also fits with Peirce's claims that in scientific inquiry deduction not only predicts consequences of a hypothesis, but in doing so makes the hypothesis more definite or precise. Obviously, this definition or preciding of the work of art and telos operates in concert with projection. Indeed, the various methods of projection involve narrowing or preciding what an artist's work is and will be.

Apart from these analogies to other parts of Peirce's architectonic, the case simply seems to be that preciding is necessary for testing to begin. Until a work of art is made precise to some degree, it cannot be judged as a work of art. To put it another way, as suggested above, preciding is the positive side of projecting; it is an artist's decision to make his telos/work of art specific in certain directions, to make a "this-such" thereby defining a "such." Thus, the two aspects are cooperative. The problem is, however, that we cannot say precisely how the definition or preciding occurs without reverting to an old form of teleology. Once again, an artist does not know what he is going to create until he creates it. Thus, if we could say precisely how the preciding were to take place, we should be able to predict its outcome and this is just what, according to Peirce, we cannot do.

The answer, of course, lies in our description of developmental teleology. In the deductive stage, as in the abductive stage, it is an

artist's love for his work which allows it to grow. He must cherish his ideas. Moreover, each step of the specification affects the telos by limiting future possibilities in certain directions. The preciding process, then, is a give and take between the work of art as it actually is and the telos as what the work of art may become; and this takes place in a series of "presents" under the guidance of an artist's love. For example, when Cezanne placed a bold brush stroke on a canvas, he began to limit the future of his work. He began to specify his telos and to define his work. As the painting developed, that bold stroke came to balance two opposed but related card-playing individuals. This particular outcome was to some extent effected by the preciding in the initial bold stroke, together with a host of other preciding steps under the general sway of Cezanne's telos. Thus it is that an artist's "Thirdness guides and influences, but does not rigidly control the development of events" [12]. Our description here is general; it accounts for preciding, but cannot tell us in any particular case just how an artist will precide. Indeed, so far as mind is concerned, Peirce argued, this is the only kind of explanation we can give (6.148-149).

This leads us into the final stage of creativity: the inductive stage. As we mentioned, specific inductions can occur before specific deductions, but we will now be concerned with two specific problems: 1)what is involved in any particular artistic induction and 2) specifically, how can we describe the final induction of creativity which somehow decides that a process is finished?

Artistic Induction

The inductive or testing stage of artistic creativity in some way seems the simplest and most straightforward. An artist simply takes his work of art in its current state and asks himself if it is esthetically fine. If it is, he deems it so; if not, not. On the other

hand, the simplicity of this general view hides some very subtle and difficult problems which need to be taken into account.

In Chapter 3 we saw that artistic testing differed from scientific testing because a work of art could be judged only by or in terms of itself: in art and science the forms of evaluating the results of abduction are necessarily different. This should be even clearer now that we have established not only the self-representative nature of works of art, but their ontological status as *sui generis* as well. Thus, a work of art is tested by seeing if it is consistent with itself as a telos, not by seeing if it corresponds with established facts and laws. Once again, an artist tests to see if a work of art is self-adequate. As Smith puts it:

> What is present to mind at the end of a transaction with a work of art is not two separate things, the work and its meaning, but *one* interpretant whose character is determined by the entire symbolic relationship [13].

This is what we took Peirce to have meant when he talked of art as being true. As a result of this difference, of course, we found that another kind of testing was needed. In Chapter 3 I described this in as much detail as it seemed to me the Peircean context provided. That is, an artist tests by approaching his work in the "esthetic mood" to see if it expresses the embodiment of a reasonable feeling. So far, our second analogy confirms this description inasmuch as God, in similar fashion, judges His created universe. However, this corroboration does nothing to settle the problems which seem implicit in Peirce's view.

Here, then, we can begin by looking at how the testing stage of artistic creativity differs from God's creative process. Once again, the difference hinges on man's finitude and fallibility. When God judges His work, He merely says, "it is good." His esthetic perfection entails a *kalos* universe on Peirce's view. A human artist, however, like a scientist, may judge in error. Indeed, an artist does not even have the evidence of strict induction to fall back on; he cannot, for example, say that his judgment did fit the

facts as then known. His judgment is essentially right or wrong.

Because of this difference, the final judgment of a work of art cannot come through an artist. An artist must judge his work by his esthetic judgment. But unlike God an artist cannot deem a work truly an artistic creation simply by his judgment; the truth of the creativity must rest on another opinion. In this fundamental way, Peirce rejected esthetic subjectivism. The Peircean answer to this situation comes from his account of science. That is, artistic *kalosness*, like the truth of scientific inquiry, turns out to be regulated by the ideal opinion of an infinite community of observers [14]. Only in this ideal can artistic creativity truly be judged as final and valuable. Therefore, like scientists, artists must proceed on their opinions as best they can establish them according to the method Peirce offered. Beyond that, there is nothing but unchecked subjectivism.

With these differences in mind, let us turn to the features of artistic testing. One point to notice is the continuity of the artistic method--it is run through with a give and take between creator and created. At the outset, the creator opens himself to possibilities. In the middle, he allows the work of art to suggest its own evolution; and here in the end, the artist must allow the work to judge itself as he contemplates it. Throughout all of this the artist actively engages his work with his agapastic concern for it. Thus, esthetic contemplation, as the end of the creative process, like the abductive beginning, is actively passive. Peirce described the psychological mood for testing as follows:

> Contemplation consists in using our self-control to remove us from the forcible intrusion of other thoughts, and in considering the interesting bearings of what may lie hidden in the icon, so as to cause the subjective intensity of it to increase (7.556).

Thus, in contemplating his work of art to test for *kalosness*, an artist does nothing radically different from what he does throughout the rest of the creative process. Rather, the inductive

stage is essentially a continuation of the same approach to the growing work, though it introduces a new task.

Earlier I attempted to describe the measure of this testing stage as Peirce saw it. We found that it was *kalosness* which, because it is admirable in itself, turns out to be somehow related to reasonableness or intelligibility. Thus, an artist contemplates his work to see if it presents a reasonable feeling. If we take the relation of *kalosness* and reasonableness to be one of identity, as Peirce seemed to suggest in his equation of concrete reasonableness and the *summum bonum*, then we find that it is not consistent with all of what Peirce said. At times he argued that everything is esthetically good, suggesting an ultimate esthetic relativism. Peirce did not appear to resolve this difficulty. However, Hausman, in his "Value and the Peircean Categories," suggests a reasonable way of understanding the problem. He argues that reasonableness (as thirdness) and esthetic value or *kalosness*, instead of being identified as I have argued, turn out to be "so interdependent that they are co-present as mutual grounds for one another" [15]. The advantage here is that *kalosness* does not once again get reduced to a single quality, as it does, for example, on the beauty theory of art. It is independent, though closely connected with reasonableness as the admirable in itself. Moreover, on the cosmic level this view prevents a reduction of the "ought" to the "is." That is, though God's esthetic judgment is infallible, it nevertheless is a judgment concerning whether the universe as evolved reasonableness is what it ought to be. The reasonableness, then, is *kalos*; it is not *kalosness*.

I present Hausman's argument as a reasonable solution to the dilemma concerning esthetic testing with which Peirce left us. However, it is argued as a necessary upshot of Peirce's categoriology and cosmology and is not defended by direct statements from Peirce. Thus, it seems to me the view that Peirce ought to have taken, or might have taken had he pursued the issue, rather than the view he did take. Once again, lack of work in esthetics is probably the reason behind the discrepancy.

Regardless of which view we take, our second analogy

confirms our argument in Chapter 3 that an artist tests through contemplation for the expression of a reasonable feeling. There we saw that God's telos in general does involve reasonableness and intelligibility. If the telos involves such, then the testing of the telos amounts to seeing if the creation is reasonable. Now, whether we take the relationship of the reasonable and the *kalos* to be one of identity or co-presence, we can, as I suggested, understand the reasonableness as "growing reasonableness." This we found especially to be the case in relation to God's telos. Let us, then, compare how this esthetic ideal works at the cosmic and human levels

To see how the idea that an artist's telos is generally the growth of reasonableness of a quality of feeling works, let us first review the outlines of our conclusions concerning scientific creativity and God's creativity. In Chapter 2 we found scientific induction to be incomplete in two senses: 1) it is incomplete in the sense that it is fallible--because it cannot provide a full enumeration of cases, it may draw false conclusions and 2) it is incomplete in the sense that, though essentially correct, it may have to grow in certain directions to account for new facts as they are developed and discovered. In this much, it can be true but incomplete. Therefore, in scientific induction we may reach (and do reach) the position where a scientist is finished, while his hypothesis remains open to growth.

Likewise, God's creativity displays incompleteness. However, the particulars are a bit different. First, parts of God's work are finished, so far as He is concerned. At the same time, His work of art as a whole, in being an open universe, is always growing. And God, in being infinite, must attend to this growth; He can never leave His work behind Him. Obviously, this is in contrast with instances of finite creativity.

In artistic creativity we first see that an artist does not worry, as does a scientist, about the evolution or discovery of new facts, for while such facts might be used to develop the evolution of a work of art, they will not have the power to refute a work of art as they might a scientific hypothesis. Still, a work of art is incomplete

in an analogous sense. Simply put, it is fallible on esthetic grounds; it may fail to complete a state of *kalosness.* Moreover, there is a strong analogy to the second sense of inductive incompleteness. Whereas a hypothesis can grow to adapt to new facts, a work of art may grow to adapt to new interpretations. For example, just as Newtonian mechanics are perhaps more fully understood within relativity theory, so *The Madonna with the Long Neck* may be more fully understood in the light of contemporary art.

This similarity, however, obviates a critical point: that, though a work of art is open to future development because it is "growing reasonableness," an artist, like a scientist, must be "finished" when his limits are reached. As far as he can tell, his work of art is *kalos* and that is the end of his induction and his creative process. Here Dewey's notion of a "consummatory experience" is helpful, for we have the paradox of a work of art which is finished but not complete. For Dewey: "The consummatory phase of experience--which is intervening as well as final--always presents something new" [16]. And, he added, "there is no final term in appreciation of a work of art" [17]. So it is with Peirce's developmental teleology; a finite creator must choose to be finished.

The final indicator on this issue of course is human finitude and ultimate mortality. God's work of art is never finished nor is He ever finished. But when an artist dies, his work of art can no longer be developed by him. This entails a corresponding difference between the art works of humans and God as "growing reasonableness." Because God is immortal, His work of art continues to grow both through further creation and through further interpretation--God continues to pursue abduction and induction. An artist's work, however, cannot continue to grow in creation because its creator and creative control are gone. Its specification as a "this-such" is ended. This is one reason perhaps that works of art appear to be static to us--there are no new diversities added to *Mona Lisa.* The only way a work of art can continue to grow, then, as a creation after the final testing by the artist, is through interpretation by a larger community. While this

growth is essentially outside the creative process as we have defined it, it is important as a result of artistic creativity insofar as it helps us understand the relation of God's creativity to that of finite beings unable to complete their own interpretive evaluations. Therefore, I shall briefly show how this view is consistent with Peirce's semiotic.

Let us return to our view that works of art are essentially hypoicons of a metaphorical nature. As such, for Peirce, they "play in knowledge a part iconized by that played in evolution according to the Darwinian theory, by fortuitous variations in reproduction" (MS. 599, pp. 42-43). In particular, they bring new symbols into the world. To be sure, as hypoicons they are already symbols, but their iconicity is emphasized. However, as they become habitually interpreted, they become more heavily symbolic. Therefore, to see how works of art can be iconic sources of future meaning which can grow within limits, we must look more closely at the unemphasized aspects of indexicality and symbolicity. Indeed, the key to growth, as I suggested earlier, is the indexicality or reference of a work of art.

In its metaphorical nature, a work of art creates its own referent, its own breadth. And this breadth in turn controls its depth, as we saw in our discussion of God's universe as a sign. What is "fixed" is the iconic form of the work of art; not its indexicality. A work of art, then, in relation to its observers or interpreters points to an individual which is open to further development while at the same time restricted in certain directions. There will be no additions to the breadth from the creator, but there may be from interpreters--this is the sense in which it brings with it something new each time it is "consummated."

Let us take as an example Picasso's *Guernica*. As Kaelin argues, while it in one sense "re-presents," it also presents us with a new quality of feeling [18]. As a work of art, it is the latter we are interested in. Now, one way symbolicity grows is through the isolation of parts of a work of art's created referent. Thus, we might say, "this or that tragedy was a real *Guernica*;" or, in a more trivial fashion, "this broken window is formed like

Guernica." So far as any such usages are conventionalized, they are symbolic in Peircean terms. In these aspects, a work of art becomes frozen or dormant, as for example *Mona Lisa*'s smile or Falstaff's joviality. In this way, works of art grow from iconicity to symbolicity. The key, however, is that the growth is open because the referent is a continuum. *Guernica* may add much to its interpretation in the expansion of its referent.

My conclusion, then, is that artistic creativity, so far as its goal is related to presenting "growing intelligibility," must present a work of art which is capable of growth. Yet, this growth cannot be precisely like that which we found in God's creative process. And the difference lies in the fact that a finite work of art cannot grow indefinitely by creation, but only by interpretation.

Thus, an artist completes his creativity by judging his creation to present a quality of feeling as intelligible or *kalos*, however the two be related. The actualizing is ended when the contemplation is satisfied. At this point a work of art, as much as it can, becomes its telos. There is no further development of the telos itself, but only of its specificity in interpretation. In a fallible way, an artist holds his work to be adequate to his telos; in other words, his work of art has become self-adequate.

This brings the second analogy to a close. I have tried here to draw the analogies together as I presented a general description of Peircean creativity; we see how the three stages of creativity can function as a framework for the notion of a creative evolution or developmental teleology. In the conclusion, then, I shall try to present this description in a concise form as well as to suggest some related concerns which might be of interest for further study.

Chapter 6
A FINAL DESCRIPTION

> For every symbol is a living thing, in a very strict sense that is no mere figure of speech. The body of the symbol changes slowly, but its meaning inevitably grows, incorporates new elements and throws off old ones (2.222).

An Overview

In a few paragraphs, I want here to try to draw together my view of Peircean creativity descriptively. As I do so, we should keep in mind that this description fills a gap in Peirce's esthetics as a normative science; that is, it tells us how, according to Peirce, artistic creativity ought to be pursued, just as Peirce's logic described how scientific inquiry ought to be pursued.

I begin with a point which I have suggested at several points, but which I have not developed at length. It is a point implicit throughout Peirce's philosophical writings on science and its importance is reflected in Peirce's own work in philosophy and science. The concern is that creativity of any kind cannot begin without a certain amount of funded experience; creation does not take place in a Cartesian vacuum. In science there are practical necessities and theoretical underpinnings which must be learned before a scientist can be creative. It was in part the massive amounts of sheer work which Kepler performed which impressed Peirce. Kepler's creativity took place against the background of the work (1.71-74). The same is true for art. A painter cannot

satisfactorily embody a quality of feeling without first knowing something of technique in brush-strokes, medium application, and so on. Nor can an artist proceed without some familiarity with the tradition; to get beyond it, he must know it. This is why, as Dewey argued, child prodigies tend to be technicians rather than creators [1]. Peirce did not make an issue of this point because he took it for granted. It is the heart of the matter, for it is this mundane side of science and art which must precede the inception of any creative act.

With these necessary conditions under control, an artist proceeds to open himself to a random play of ideas through imagination. The beginning of creativity, as our first analogy suggested, is artistic abduction. By chance, one combination of ideas shall purport to fill the indeterminate telos with which an artist begins; a pure feeling is chancing to be made intelligible under the artist's care. There is no certainty in this initial step toward actualization, for the artist is fallible. Upon accepting this idea as a possibility for embodying the quality of feeling (at this point still an indefinite telos) he desires, the artist must control the idea by his agapastic love for it, as suggested by our second analogy. He cannot control it rationally without reducing it to something else which is antecedent. The initial propulsion and acceptance of this tentative solution to an indeterminate telos ends the abductive stage of artistic creativity.

The artist then continues to let the idea develop itself under his care. The work of art becomes autonomous under the artist's guidance. As Hausman puts it, "As it [the creator] forms the product, it forms the standards which serve as the model for the creation" [2]. This illustrates the interplay between the work of art and the telos as they evolve together. The telos generally places the work of art and the work of art, in determining the telos, places limits on its own further development; it forms the standards for itself as evolving. This stage reflects the purpose, though not the logical structure, of deduction in science. In the growth of the work the artist must project his telos in many directions and eliminate those which cannot work. In his positive steps, he

precides the work itself and his telos. Each step in this "deductive" process must be guided by an esthetic testing by the artist, just as in science induction and deduction intermingle as inquiry proceeds. While the normative sciences establish the modes of thought as stages, they do not preclude the overlap of these modes in the actual, lived processes of scientific inquiry and artistic creativity.

The final step of creativity is the final testing of the work of art. Still loving his work, the artist must shut out other concerns and approach his work as it is in itself, as it is present. Once again, the artist controls the process, but he lets the work speak to him as he does so. That is its function as a sign. If he judges it to be *kalos* in embodying a reasonable feeling, he deems himself finished with the work, though he should know that it may never be complete. As far as the artist can tell the work is adequate to his telos and thus adequate to itself. It presents a novel, reasonable feeling; for example, *Guernica* presents a *Guernica*-feeling which is unprecedented in the world.

Thus, the Peircean artist is like a scientist in employing three modes of mental activity in pursuit of an end. These modes function as "stages" in a general way, because the beginning and the conclusion of creativity each has a certain character. However, simply as modes, as I argued above, these "stages" intermingle throughout the creative process, just as they do for a scientist who is creatively discovering. Once again, the primary distinction is that creative scientists seek truths of correspondence and artists seek to create what is *kalos*. Thus, whereas the Peircean scientist, as we saw in the second chapter, tries to discover God's work, a Peircean artist, as we saw in the last chapter, attempts to be like God in determining a part of the creative evolution.

A Peircean artist is also like God in controlling his creativity by his agapastic love for his creation. Through the spontaneity of the present an artist allows himself to bring something new into the future, something not reducible to anything in the past. Artistic creativity, like God's creative evolution of the universe, functions according to a developmental teleology. And this creative evolution

of a work of art takes place within the confines of the threefold division of artistic modes: the telos arises in artistic abduction, artistic deduction projects for and precides the telos, and artistic induction tests the finished work of art for esthetic value.

These two analogies together, then, outline the form of Peircean artistic creativity. However, we must keep in mind that they are analogies. Artistic "reasoning" is a degenerate form of reasoning. Thus, when we speak of deduction and induction in art, we cannot speak of logical forms, but only of methodological forms and the general purposes these modes of reasoning have. Likewise, human artists are not Gods; they are finite beings. Therefore, as Hausman argues, eros may get mixed in with *agape* in their creativity [3]. Moreover, their creativity, unlike that of Peirce's God, is limited in scope and direction. Artists do not create *the* universe so much as they create finite universes which resemble God's work in their openness to future possibility. Artists must decide to be finished with a work at specific times; they are not eternal. Thus, the analogies, while they are the foundation of my argument, remain analogies and must not be mistaken for relations of identity.

If this is a correct, or at least plausible, understanding of what Peirce might have meant by artistic creativity, it suggests several points of import. I shall conclude by taking a look at what I think are the most important of these: the relation of creativity to the traditional problem of freedom and determinism, the possibility of art's playing a role in the growth of ideas within Peirce's architectonic, and the relation of Peirce's view of creativity to the tradition of American philosophy.

General Points of Import

One important upshot of Peirce's view of creativity is that it involves an attempt to solve a traditional dilemma by going between the horns. Peirce tried to mediate at the human level, as

he explicitly did at the cosmic level, between determinism and indeterminism. Indeed, it was his very theory of the mind or person which decribed this mediation in the *Monist* articles of 1892-93. It is often lamented by Peirce scholars that Peirce, as Bernstein says, "has failed to work out an adequate theory of the self" [4]. However, I believe the real failure here is that there is a tendency not to see what stares us in the face, as Peirce might have said. Peirce's entire philosophy is a theory of the self: God is a person, God is mind. The universe unfolds under the agapastic guidance of God. Creative evolution is, in being God's symbol, the development of a self. And so with finite beings. The descriptions of and norms for their behavior are everywhere; for Peirce's philosophy, as we saw, is at bottom anthropomorphic because phenomenologically that is all we have as evidence. Thus, the mediation between determinism and indeterminism not only applies to the cosmos, but for Peirce was a way of understanding human freedom. Its application here allowed Peirce to account for what humans as artistic creators do without simply reducing what they do to some form of mechanism and without casting what they do to the muses as entirely inexplicable because purely tychastic. In short, the mediation was for Peirce the most reasonable way to account for what is presented in experience.

I should like to argue that this mediation of a traditional problem, in general metaphysics as well as esthetics, was extremely important in Peirce's context, because he was contending with a newly flowered scientistic tradition of which he was a part. He was contending, on the one hand, with dogmatic theologians with whose philosophical views he was sometimes sympathetic, but with whose methods he was not. On the other hand, his scientistic colleagues such as John Fiske, Chauncey Wright, and later Dewey were pushing a naturalism very little removed from the anancastic mechanisms of d'Holbach and LaMetrie. Peirce was trying to bring these sides together in what he thought to be a reasonable way. This mediation, then, in taking account as it did of Peirce's synechism and agapism together, constituted an important metaphysical contribution in relation to artistic creativity. The

point of most import for esthetics, I think, is one mentioned earlier which, because of its importance, bears repeating: that is, that an artist's particular work of art is not the only one that could have solved his telos.

In artistic creativity a work of art does not constitute "the best of all possible worlds" but "one of many best possible worlds." This is a direct result of the mediation Peirce instituted. If teleology were non-developmental in creativity, we would be able to say with Brand Blanshard, "only this note will do" [5]. We are indeed, after the fact, tempted to say this for any creative process, for *what is* certainly looks as if it is *what must be*, if it is fitting. Peirce's point was that there is an element of chance involved in the decision of what the specifics of an indeterminate telos will be; and this presupposes other real possibilities at the time of decision. Without this distinction, Peirce argued, we do not avoid necessitarianism. The reason this seems important is that it has not been acknowledged, with a few exceptions, even by contemporary thinkers who hold for a similar view of creativity. The tendency is to try to explain the necessity of the specifics of a work of art through a process which bears no hard necessity; that is, while some estheticians are willing to grant freedom in artistic creativity, they at the same time want to claim that a resulting work of art is a necessary result of that creativity. Thus, I believe Peirce's insight into this problem is important and ought to be developed.

This element of freedom in artistic creativity leads into the second point of import: the growth of ideas in Peirce's system. Artists are constrained neither by their own previous thoughts nor by a reality to which their creations must correspond. Therefore, their creations are able to play a role in the growth of ideas which is distinct from that of scientific theories. Peirce admitted the importance of such a role, but he did not develop its import for his own architectonic. Having described his view of artistic creativity, we can now, I think, say something about this role. Indeed, Peirce himself did provide a hint when he argued that icons, as we saw earlier, in general "play in knowledge a part iconized by that played in evolution according to the Darwinian theory, by

fortuitous variations in reproduction" (MS. 599, pp. 42-43). That is, icons bring spontaneous diversities into the universe. Since works of art, as we saw, are icons primarily, they fall under this description.

The upshot of the hint is that works of art affect the growth of ideas by bringing radically new ideas--reasonable feelings--into existence. Artists, Peirce argued, unlike scientists, are concerned primarily with those things which are *sui generis*, with diversities and spontaneities (MS. 304, p. 7). Because of this concern, artists have an entirely different focus for the purpose of their work. Whereas science tries to bring order to the growth of ideas (to the world), art tries to fragment the world, to bring new diversities to life which cut through the regularity and unity imposed by science.

There is clearly a need for this function of art within the context of Peirce's architectonic. In his cosmology Peirce argued for an open and evolving universe which at one and the same time is becoming more and more regular and more and more diverse. In order to reflect this description in the realm of human thought, Peirce must find a counterbalance for the orderliness and attempted coherence of science. Since artistic creativity parallels scientific inquiry as an object of a normative science, it can easily be viewed as providing this counterbalance. Thus, with its metaphorical nature, its greater freedom, and its concern for the *sui generis*, artistic creativity plays the role of increasing diversity among ideas. However many difficulties such a view might entail, I believe it accurately reflects the manner in which art fits into Peirce's architectonic. Moreover, its suggestiveness as a way of resolving the tension between science and art bears further investigation even beyond the Peircean framework.

Let me turn now from the growth of ideas as a topic within Peirce's system to the actual growth of ideas within the history of American philosophy. This is the final, and perhaps the most important, outcome of an analysis of Peirce's view of artistic creativity. My point here is simply that Peircean creativity as here presented foreshadowed many of the developments in the philosophies of art and creativity which follow Peirce in the

American tradition. Kaelin has established a connection between Peirce's work and the esthetics of Susanne Langer and Charles Morris. I shall give an overview of his arguments. Hartshorne explicitly states his indebtedness to Peirce, so I shall briefly describe his general reliance on Peirce's notion of creativity. And finally, I shall examine in somewhat more detail what I think is the most important historical connection: that between Peircean creativity and Dewey's work in *Art as Experience.*

Each of these others holds a view that is novel, and I do not intend to reduce them to Peirceans. Langer, for example, although she was familiar with Peirce's semiotic, more specifically followed Whitehead and Cassirer [6]. Nevertheless, there is a historical thread here which is of interest. Once again, I am merely displaying this thread as a suggestion for further study; to develop the case here would be to embark on a new project altogether. My point here is twofold and perhaps in a sense circular. On the one hand, in suggesting the similarities I hope to lend support to my interpretation of Peircean creativity, insofar as it can be seen to fit into the American tradition. On the other hand, if I am correct, then we can in fact focus a historical continuity concerning artistic creativity in the philosophy of Peirce. My hope for averting the charge of vicious circularity rests in presenting this circular dependency in the light of all my previous arguments. With their supporting evidence, the viciousness is, I hope, alleviated, if not eradicated.

The reason Peirce's view can function as a focus is that its foreshadowing occurred in many areas. It suggests threads equally in the metaphysics of evolution, in the role of artistic creativity, and in a semiotic approach to esthetics. In this way, it pulls together strands of a subsequent tradition which threaten to scatter under the guises of different philosophical titles.

Because Hartshorne most clearly states his dependence on Peirce's account of creativity, let us begin with him. It is not surprising that this connection should exist since Hartshorne is a leading Peirce scholar and a co-editor of the first six volumes of Peirce's *Collected Papers.* Thus, at the very outset of *Creative*

Synthesis and Philosophic Method Hartshorne mentions his debt to Peircean creativity:

> Here is the ultimate meaning of creation--in the freedom or self-determination of any experience as a new 'one,' arising out of a previous many, in terms of which it cannot, by any causal relationship, be fully described. Bergson and Peirce, I think independently, first came close to the point here [7].

Hartshorne is thus to some extent indebted to Peirce for his view of creative evolution at the metaphysical level. However, the influence might carry over to his views in esthetics as well, for while God is the primary creator of the esthetically good, human beings are creators as well: "A creature is a derivative creator, a creator on a non-divine level" [8]. Just as for Peirce, the human artist is a finite version of the divine creator. Moreover, since creations cannot be fully described by "any causal relationship," what an artist creates is novel in the sense Peirce intended. Of course, Hartshorne develops a much fuller cosmology than that developed by Peirce; he is much more interested in describing the details of theism. Nevertheless, it is an idea of creativity like that established by Peirce which is central to all of his work.

Kaelin, as mentioned above, develops the similarity between the work of Peirce and that of Charles Morris. The connecting idea here is not metaphysical but semiotic. Morris took Peirce's basic account of signs and through it developed a semiotic description of art works. In *Sign, Language, and Behavior* he specifically argued for the dominance of iconicity in works of art [9]. A second point of relation is that Morris, as Kaelin argues, saw the possibility that works of art, because they are iconic signs, can be self-representational [10]. In *Signification and Significance* he hinted at this when in talking of works of art he argued that "a sign must have signification, but it need not *denote* anything" [11]. So far as the semiotic of artistic creativity is concerned, Morris's account is at least a reasonable extension of the Peircean view I have

described. Indeed, it is important to think of Morris's work as an extension, for while he admitted his general debt to Peirce, the ideas he developed were at best implicit in Peirce's work and were nowhere overtly stated.

In connection with the relation to Peirce through the semiotic Kaelin also mentions the work of Susanne Langer. Langer too, though not necessarily from Peirce, suggested that works of art may be self-representational. She described a view in which works of art are presentational symbols which "exhibit the morphology of feeling" [12]. There are several issues involved here.

First, both Langer and Peirce argued that works of art somehow exhibit or embody feeling. While their respective uses of the word "feeling" may not be identical, they seem enough alike, in describing a firstness of consciousness, to bear comparison. Secondly, each maintained that the artistic expression of feeling is in some way different from other sorts of sign activity. In her earlier work, Langer argued that the relation between works of art and feeling was essentially a form of analogy: for example, she argued that music "is a tonal analogue of emotive life" [13]. This of course differs from Peirce's view in that it makes a work of art still representational in a fundamental sense. However, in her last work, *Mind: An Essay on Human Feeling*, she suggested a more Peirce-like account:

> A work of art is like a metaphor, to be understood without translation or comparison of ideas; it exhibits its form, and the import is immediately perceived in it . . . . One might well call a work of art a metaphorical symbol [14].

In spirit at least the two views are similar; each describes works of art as self-representational signs which exhibit qualities of feeling. While the relationship between the work of Langer and Peirce might be further developed, with regard to the tradition of American philosophy, it is not the most important relationship. As we saw, Langer is guided by several other sources. Moreover, while

she is crucially important in American philosophy, she does not follow in the pragmatic tradition.

Let us, then, look at the work of Dewey who does follow in that tradition. Specifically, we need to look at what should be an obvious point of comparison: Peirce's esthetics and Dewey's *Art as Experience.* Oddly, only one person has developed this comparison at any length: Zeman. In part this may be a result of family relations; Deweyans do not want Dewey reduced to being a disciple of Peirce and Peirceans do not want Peirce explained by Dewey. However, I think the comparison can be made without doing either man a disfavor. On the contrary, the comparison should strengthen the views of each, since, as both Dewey and Peirce maintained, the history of ideas is a history of growth and evolution.

In his article, "The Esthetic Sign," J. Jay Zeman uses Dewey's work explicitly to complement Peirce's beginnings in esthetics [15]. Zeman correctly defends his comparison by pointing to Dewey's article, "Peirce's Theory of Quality," which appeared in the December 1935 issue of *The Journal of Philosophy,* one year after the publication of *Art as Experience.* What the article demonstrates is Dewey's thorough familiarity and, to some extent, agreement with Peirce's work. More specifically, it shows his understanding of the categories and the roles of quality as firstness which are so important for Peirce's esthetics. As Zeman argues: "Thus it seems reasonable to me that Dewey's thought is not at all an unreasonable place to look for guidelines for the development of an esthetic phase of Peirce's semiotic" [16].

Zeman sets out by comparing Peirce's description of the *kalos* as a single quality embodying a reasonable feeling to Dewey's description of an experience as "a single *quality* that pervades the entire experience in spite of the variation of its constituent parts" [17]. Inasmuch as for Dewey "an experience" can be a work of art, the similarity is clear. This of course develops a similarity I suggested earlier: that is, that Peirce's *kalosness* might be understood in terms of Dewey's "expressiveness." There is no one esthetic quality which makes a work of art *kalos*; rather, its

kalosness depends on its expressing *some* quality of feeling. Expression is art's way of making experience reasonable or intelligible: "Science states meanings; art expresses them" [18].

Next Zeman points out that Dewey's division of *an* experience into esthetic, practical, and intellectual phases corresponds closely to Peirce's categories and division of the normative sciences. From this parallel Zeman pushes further to Peirce's semiotic divisions of interpretants. Here, as we saw earlier, he correctly identifies Peirce's esthetics with the emotional and immediate interpretants because of their firstness.

While I think Zeman's points are well taken, I believe they fall short of what can be done. The idea of immediacy which Zeman points to in Dewey's work is clearly reminiscent of the mood in which the present is viewed as the present. Too, the Deweyan uniqueness of quality of works of art, which Zeman describes, is clearly consistent with the idea of a work of art being self-representational and therefore not reducible to antecedents. Dewey goes so far as to point to this as a difference between science and art, a view in accord with Peirce's distinction between the analogical and metaphorical natures of each. Dewey put it as follows:

> The poetic as distinct from the prosaic, esthetic art as distinct from scientific, expression as distinct from statement, does something different from leading to an experience. It constitutes one [19].

These are some possible extensions of Zeman's comparison which go beyond a relation merely to Peirce's semiotic.

To these extensions we can add at least two independent similarities which have to do with the creative process itself: 1) the role of spontaneity and 2) the active/passive nature of creativity. Both points might be developed at length by going through *Art as Experience* and pulling out the relevant quotations. Dewey presented the case for spontaneity outright and described the active/passive nature of art through his distinction between doing

and undergoing. However, since I am working within the confines of a brief analysis, I think a single extended quotation is more convincing than a series of independent arguments:

> The consummatory phase of experience--which is intervening as well as final--always presents something new. Admiration always includes an element of wonder. As a Renascence writer said: 'There is no excellent beauty that hath not some strangeness in the proportion.' The unexpected turn, something which the artist himself does not definitely foresee, is a condition of the felicitous quality of a work of art; it saves it from being mechanical. It gives the spontaneity of the unpremeditated to what would otherwise be a fruit of calculation. The painter and poet like the scientific inquirer know the delights of discovery. Those who carry on their work as a demonstration of a preconceived thesis may have the joys of egotistic success but not that of fulfillment of an experience for its own sake. In the latter, they learn by their work, as they proceed, to see and feel what had not been part of their original plan or purpose [20].

One does not have to look too closely to see hints of Peirce's developmental teleology, agapasticism, and notion of finite finishedness. It seems clear that, whatever their differences, Peirce and Dewey shared many ideas.

The similarities presented here, not only with Dewey but with the others as well, will, I hope, lend some credence to my interpretation of Peircean creativity. In any event, it suggests a focus for American esthetics which otherwise seems to be lacking. Needless to say, there are important differences among all of these thinkers. It is not entirely clear, for example, that Dewey shares the idea of radical novelty in works of art which Peirce suggested. Still, an extended investigation of these historical connections would, I think, constitute a worthwhile project.

The final point I want to make stems from these comparisons: that is, that after the turn of the century one thread of American

thought began to emphasize the importance of art relative to science. With Emerson and the Transcendentalists, American metaphysics began with an emphasis on the spiritual and the esthetic: poetry, if it did not rule science, was easily of equal status. However, through the middle of the 19th century, science came to dominate. Darwin's work had an enormous influence and we find the seeds of the naturalism which was to become an American institution in the work of Wright, Fiske, and others. Peirce found himself caught up in the scientistic current and spent most of his philosophical life in it. Yet, he recognized the fundamental importance of esthetics and art and tried to leave a place for them in his philosophy. Thus, in developing this corner of his system, we establish a better balance for it, a balance which Peirce recognized as necessary.

This balance not only gives us a clearer picture of Peirce's architectonic, but it establishes a source for a trend in the American tradition. Dewey most clearly of all attempted to do justice to both science and art within the context of a metaphysics of an open universe. The same commitment is found more recently in the work of Hartshorne, Langer and numerous others. Nevertheless, the balance between science and art has not been developed nearly as much as it might be. My hope, then, is that this development of an obscure corner of Peirce's work might influence others to address this balance of the scientific and the artistic in even greater detail.

All of these points, I think, will bear further study. Moreover, Peirce's esthetics itself can still be developed in many ways both in its own terms and by extending whatever insights it suggests. Much has been done with regard to his semiotic, but more needs to be done to bring this work into focus with the rest of Peirce's architectonic. Thus, while this account of Peirce's creativity concludes the limits of one theme, it lays the foundation for a great deal more work.

Chapter 1

[1] All Peirce references are as follows: *Collected Papers*, ed. Charles Hartshorne and Paul Weiss, vol. 1-6, ed. Arthur Burks, vol. 7-8 (Cambridge, Mass.: Harvard University Press, 1931-1957). All listed by volume and paragraph number. *Writings of Charles S. Peirce: A Chronological Edition*, ed. Max Fisch (Bloomington, Indiana: University of Indiana Press, 1982-1984), vol. 1-3. Listed as CE with volume and page numbers. All manuscript numbers are from the Robin listing: *Annotated Catalogue of the Papers of Charles S. Peirce* (Worcester, Mass.: Harvard University Press, 1967).

[2] My search has focused on the manuscript collection of Peirce's work available on microfilm. I have also used the volumes listed in note 1 as well as Carolyn Eisele's collection, *New Elements of Mathematics by Charles S. Peirce* (The Hague: Mouton, 1976), vol. 1-4.

[3] Hocutt, "The Logical Foundations of Peirce's Aesthetics," *The Journal of Aesthetics and Art Criticism*, 21, 1962, p. 157.

[4] E. F. Kaelin, "Reflections on Peirce's Aesthetics," *The Monist*, 65, 1982. Beverley E. Kent, "Peirce's Esthetics: A New Look," *Transactions of the Charles S. Peirce Society*, 12, 1976. C. M. Smith, "The Aesthetics of Charles S. Peirce," *The Journal of Aesthetics and Art Criticism*, 31, 1972.

[5] See, for example, Carl R. Hausman, "Freedom, Indeterminism, and Necessity in the Origination of Novelty," *The Southern Journal of Philosophy*, vol. 9, 1971, p. 172.

[6] See, for example, Murray Murphey, *The Development of Peirce's Philosophy* (Cambridge, Mass.: Harvard University Press,

1961), pp. 395 ff.

[7] Carolyn Eisele, "Mathematical Methodology in the Thought of Charles S. Peirce," *Historia Mathematica*, vol. 9, 3, August 1982, p. 338.

[8] One example of the type of argument Peirce used for this point can be found at 1.347.

Chapter 2

[1] William Davis, *Peirce's Epistemology* (The Hague: Martinus Nijhoff, 1972), p. 22.

[2] Ross translates this as "reduction." See W. D. Ross, *The Works of Aristotle* (Oxford: Oxford University Press, 1963), vol. 1.

[3] Aristotle, *Prior Analytics*, 69a, 36.

[4] Ross, *Aristoteles: Prior and Posterior Analytics* (Oxford: Clarendon Press, 1965), p. 490.

[5] Ross, p. 490.

[6] In his first example Aristotle argues that if in a syllogism we are uncertain concerning the truth of the minor premiss and a conclusion, and we believe the minor premiss more strongly than the conclusion, then that minor premiss lends support to the conclusion. In the second example he argues that we come to know the conclusion better, if the middles between the minor term and the middle are few. This example fits Peirce's case only indirectly, if at all.

[7] Davis, p. 48.

[8] K.T. Fann, *Peirce's Theory of Abduction* (The Hague: Martinus Nijhoff, 1970).

[9] Fann, p. 32. Arthur Burks, "Peirce's Theory of Abduction," *Philosophy of Science*, 13 (1946), p. 303.

[10] Fann, p. 32

[11] See James K. Feibleman, *An Introduction to the Philosophy of Charles S. Peirce* (Cambridge, Mass.: M.I.T. Press, 1969), p. 322.

[12] Francis E. Reilly, *Charles Peirce's Theory of Scientific*

Method (New York: Fordham Univ. Press, 1970), pp. 52-53.

[13] Peirce's realism allows for the perception of laws, ideas, and concepts.

[14] This example, as others Peirce uses, involves some difficulty. If gravity is present in the universe in 1600, it should also be in 1905. This is understandable if "Einsteinian gravity" incorporates "Newtonian gravity" as a special case. If not, however, then Peirce would have to say that the law, as a concept, was implicit in the history of ideas and not that gravity, as a real force, was present in nature.

[15] Reilly, p. 53.

[16] Reilly, p.53.

[17] Nicholas Rescher provides a schematism which nicely describes Reilly's view. However, his discussion of the issue makes the necessary distinctions and thus overcomes the problem of the schematism itself. What the source of his model is is not clear. Rescher, *Peirce's Philosophy of Science* (Notre Dame, Indiana: Univ. of Notre Dame Press, 1978), p. 41.

[18] Davis, p. 24.

[19] Davis, p. 25. See Justus Buchler, *Charles Peirce's Empiricism* (New York: Octagon Press, 1966).

[20] Karl Popper, *Conjectures and Refutations* (New York: Harper and Row, 1965), pp. 43-46.

[21] Davis, p. 24.

[22] Davis, p. 39.

[23] Davis, p. 24.

[24] Davis, p.34.

[25] Popper, *The Logic of Discovery* (New York: Harper and Row, 1968), p. 31.

[26] Rescher, pp. 41-42.

[27] Rescher, p. 54.

[28] Rescher, p. 58.

[29] Davis, p. 26.

[30] Apel, p. 106.

[31] Harry Frankfurt, "Peirce's Notion of Abduction," *The Journal of Philosophy*, 55 (1958), p.594.

[32] This is something like the tack Popper takes, though he does not do so in direct response to Peirce.

[33] Frankfurt, p. 594.

[34] Frankfurt, p. 594.

[35] Frankfurt, p. 595.

[36] In 1893 Peirce gave an account of inference in which he argued that an inference may have only one premiss. If one wants to argue that the interpretation we are examining reduces abduction to one premiss, a view N.R. Hanson suggests, such a claim need not conflict with the belief that abduction is still an inference (2.442). Hanson, "Notes Toward a Logic of Discovery," in *Perspectives on Peirce*, ed. Richard Bernstein (New Haven: Yale Univ. Press, 1965).

[37] Frankfurt, p. 594.

[38] Popper, *Logic of Discovery*, p. 31.

[39] Cf. Burks, pp. 302-303.

[40] Rescher, p. 51.

[41] Rescher, p. 51.

[42] Joseph Esposito, *Evolutionary Metaphysics* (Athens, Ohio: Ohio Univ. Press, 1980), p. 195.

[43] Fann, p. 36.

[44] Peter Skagestaad, *The Road to Inquiry* (New York: Columbia Univ. Press, 1981), p. 184.

[45] Thomas Goudge, *The Thought of C.S. Peirce* (Toronto: Univ. of Toronto Press, 1950), p. 196.

[46] Peirce gave the name speculative rhetoric to the logical study of the theory of inquiry. See 2.105-2.110.

[47] This "closeness" is what, I think, lures some to an intuitionistic view of science.

[48] Peirce distinguishes "arguments" and "argumentations" at 6.456, 2.266, and 3.160. An argument is anything which leads to a belief.

[49] Charles Hartshorne, *Creative Synthesis and Philosophic Method* (London: SCM Press, 1970). Carl Hausman, "Eros and Agape in Creative Evolution: A Peircean Insight," *Process Studies*, 4 (1974), pp.11-25.

[50] To be sure, the historical context of all creative abductions is important. History of science suggests that Newton's concept of gravity evolves from related predecessors. Nevertheless, Newton is generally held as founder of the specific theory of gravity, and even if it were argued that someone else is the source, the important point of the creation of a new idea might still obtain. A similar problem attends to attributing Darwin with the discovery of biological evolution.

[51] Of course, Peirce did extensive work on the nature of induction and this should not be overlooked in any comprehensive study of his philosophy of science.

[52] "Quasi-experimentation," for Peirce, consisted of "the entire operation of producing or searching out a state of things to which the conditional predictions deduced from hypotheses shall be applicable and of noting how far the prediction is fulfilled" (7.115, n. 27).

Chapter 3

[1] C.M. Smith, "The Aesthetics of Charles S. Peirce," *Journal of Aesthetics and Art Criticism*, 31 (1972), p.28.

[2] Of course, this relation itself is a difficult issue.

[3] See Thomas Curley, "The Relation of the Normative Sciences to Peirce's Theory of Inquiry," *Transactions of the Charles S. Peirce Society*, 5 (1969), pp. 90-106.

[4] Smith, p. 22.

[5] Kent, p. 265.

[6] Kent, p. 265.

[7] Cf. Murphey, pp. 361-362.

[8] Kent, p. 265.

[9] This is one of the themes of the latter half of Apel's book.

[10] In the sense that feeling is "thought about" art too involves the use of ideas. Nevertheless, the distinction holds insofar as we are dealing with the central content of the thought itself. See MS. 774, p. 13. Here Peirce argued that rhetoric itself

can be divided "according to the special nature of the idea to be conveyed."

[11] Eliot, *Four Quartets* (New York: Harcourt, Brace and Co., 1949), p. 5.

[12] The four mentioned in note 3 of Chapter 1 have dealt with this issue: Kaelin, Kent, Smith, and Hocutt.

[13] Hocutt, p. 158.

[14] Smith, p.26.

[15] See J. Martin and R. Harre, "Metaphor in Science," in *Metaphor: Problems and Perspectives*, ed. David Miall (New York: Humanities Press, 1982), pp. 94-96.

[16] Smith, p. 26.

[17] Ransdell, "The Epistemic Function of Iconicity in Perception," *Peirce Studies*, 1 (1979), p. 55.

[18] Smith, p. 26.

[19] Smith, p.27.

[20] Ransdell, p. 56.

[21] Smith, p. 26.

[22] This view coincides with the interaction theory of metaphor as developed by Max Black, "Metaphor," in *Models and Metaphors* (Ithaca, N.Y.: Cornell Univ. Press, 1962).

[23] This again suggests the creative aspect of the interaction theory.

[24] The idea of a referent of a creative metaphor is borrowed wholly from Carl Hausman, "Metaphors, Referents, and Individuality," *Journal of Aesthetics and Art Criticism*, 1985.

[25] Smith's examples, as we saw, suggest this point.

[26] Zeman, "The Esthetic Sign," *Semiotica*, 19 (1977), pp. 241-258.

[27] Of course a work of art might have a dynamical object as well, as in the case of any representational work.

[28] Cf. Smith, p. 27 and Kaelin, p. 148.

[29] See Hocutt, p. 163, Kaelin, p. 152, and Zeman, p. 247.

[30] Zeman's argument throughout his article that works of art are *sui generis* suggests this point.

[31] Nevertheless, as contemporary physics suggests, testing is

not always an easy process for science either.

[32] Kent is right in pointing out that these two versions of esthetic goodness are directed specifically toward art and toward expressing the idea of a "quality which is fine in its immediate presence." Kent, p. 270.

[33] Hausman outlines this problem in "Value and the Peircean Categories," *Transactions of the Charles S. Peirce Society*, (1979).

[34] Cf. Hocutt, p. 160.

[35] Dewey, *Art as Experience* (New York: G. P. Putnam's Sons, 1958), pp.58-105.

Chapter 4

[1] Orange, *Peirce's Conception of God* (Lubbock, Texas: Institute for Studies in Pragmaticism, 1984). Potter, "'Vaguely like a Man': The Theism of Charles S. Peirce," in *God Knowable and Unknowable* (New York: Fordham University Press, 1973), ed. R.J. Roth. Pfeifer, "Charles Peirce's Contribution to Religious Thought," in *Proceedings of the C.S. Peirce Bicentennial International Congress* (Lubbock: Texas Tech University Press, 1981), ed. K.L. Ketner et al., pp. 367-373.

[2] See Charles Hartshorne, "Charles Sanders Peirce's Metaphysics of Evolution," *New England Quarterly*, 14 (1941), p. 58.

[3] Mahowald, "Peirce's Concepts of God and Religion," *Transactions of the Charles S. Peirce Society*, 12, 1976, p. 372.

[4] "The Architecture of Theories," *The Monist*, I (1891); "The Doctrine of Necessity Examined," II (1892), "The Law of Mind," II (1892), "Man's Glassy Essence," III (1892), and "Evolutionary Love," III (1893).

[5] Cf. Murphey, p. 331 and Vincent Potter, *Charles S. Peirce on Norms and Ideals* (Amherst, Mass.: Univ. of Massachusetts Press, 1967), p. 187.

[6] Potter, *Norms and Ideals*, p. 185.

[7] Murphey, p. 364.

[8] Orange, p. 84.

[9] Orange, p. 85.

[10] Orange, p. 86. Pfeifer views this reciprocity by distinguishing Peirce's later uses of "*summum bonum*" and God: "The *summum bonum* is the evolution of reason; God is reason governing the universe" (p.369). Orange simply pushes a step farther, identifying "*summum bonum*" with "God," as ideal and act (p. 87).

[11] Murphey, p. 366.

[12] Potter, "'Vaguely Like a Man'," p.249.

[13] Peirce, however, attributed the essence of his view to Aristotle (See 1.204-214).

[14] Donald Oliver, "The Final Cause and Agapasm in Peirce's Philosophy," in *Studies in the Philosophy of Charles Sanders Peirce*, ed. E.C. Moore and R.S. Robin (Amherst: Univ. of Massachusetts Press, 1964), p. 293.

[15] Orange, p. 78.

[16] Clearly this line of reasoning in Peirce's thought might be of interest to contemporary "possible world" theorists.

[17] Orange, p.67.

[18] Pfeifer, p. 370. See also Pfeifer, "Peirce's Application of Semiotic to God," in *Peirce Studies, Number 1: Studies in Peirce's Semiotic* (Lubbock: Institute fo Studies in Pragmaticism, 1979), pp. 95-96.

[19] Orange, p. 78.

[20] See Orange, p. 77.

[21] Hartshorne, "Peirce's Metaphysics of Evolution," p. 55.

[22] All of this might lead to a discussion of the problem of evil. If the esthetic consideration is God's first consideration and it takes place before ethical or logical considerations, then of course evil can arise--there are moral gaps in creation. This is consistent with Peirce's solution to the problem of evil, which is that God loves what is evil.

[23] Orange, p. 81. Cf. Murphey, p. 347.

[24] Oliver, p.294.

[25] W. P. Gallie, *Peirce and Pragmatism* (New York: Dover, 1966), p. 226.

[26] Gallie, p. 226.

[27] Gallie, p. 227.

[28] Gallie, p. 226.

[29] Gallie, p. 226.

[30] Even if Gallie's claim is allowed to stand, Peirce might get around it by pointing out that God, as mind, can conceive the chaos and thus in His own way, which is unknowable to us, could "measure" it (6.490).

[31] Cf. Thompson, p. 151.

[32] Murphey, p. 348.

[33] Orange, p. 36.

[34] Potter, "'Vaguely Like a Man,'" p. 249. See also Pfeifer, "Peirce's Contribution," p. 369.

[35] Esposito, p. 171.

[36] Esposito, p. 171.

[37] Hausman, "Eros and Agape," p. 20.

[38] The use of "play" here as well as in his descriptions of esthetic meditation is suggestive of a subtle influence of Friedrich Schiller whose work Peirce said started him on his career in philosophy. See, e.g., *Aesthetical and Philosophical Essays,* (New York: Robertson, Ashford, and Bentley, 1902), Letter XIV, pp. 50-52.

[39] Orange, p. 84.

[40] Hausman, "Eros and Agape," p. 21.

[41] Orange, p. 80.

[42] Hausman, "Eros and Agape," p. 16.

[43] Henry James, Sr., *Substance and Shadow* (Boston: Houghton, Osgood, and Co., 1866), pp. 433-443.

[44] Hausman, "Eros and Agape," pp. 13-15.

[45] Orange, p. 81.

[46] Hartshorne, "Peirce's Metaphysics," p. 54.

[47] Murphey, p. 349.

[48] Hausman, "Eros and Agape," p. 22.

[49] Orange, p. 84.

[50] Cf. Sandra Rosenthal, "The Would-be Present of C.S. Peirce," *Transactions of the Charles S. Peirce Society*, 4 (1968), p. 161.

[51] Oliver, p. 294.

[52] Pfeifer, "Peirce's Contribution," p.370.

[53] Orange, p. 80.

[54] Orange, p. 91.

[55] Orange, p. 91.

[56] Goudge, p. 287.

[57] Orange, pp. 68-69.

[58] See, e.g., Murphey, pp. 352, 397; Oliver, p. 299; Apel, p. 156; and Potter, *On Norms and Ideals*, p. 200.

[59] Cf. Potter, "On Norms and Ideals," p.201.

[60] Potter, "On Norms and Ideals," p. 201.

[61] Murphey, p. 396.

[62] Murphey, p. 401.

[63] Cf. Murphey, p. 403.

[64] Pfeifer, "Peirce's Contribution," p. 369, n. 14.

[65] Cf. Orange, p. 82.

[66] Apel, p. 156.

[67] Orange, p. 81.

Chapter 5

[1] Murphey, p. 353.

[2] Stearns, "Firstness, Secondness, and Thirdness," in *Studies in the Philosophy of Charles Sanders Peirce*, ed. Philip Wiener and Frederic Young (Cambridge, Mass.: Harvard Univ. Press, 1952), p. 204.

[3] For an excellent account of how Peirce related the past and the future through the present, see Rosenthal, pp. 160-161.

[4] See Hartshorne, *Creative Synthesis*, p. 109.

[5] See Hartshorne, *Creative Synthesis* and Hausman, "Eros and Agape."

[6] Hausman, "Eros and Agape," p. 14.

[7] Hausman, "Eros and Agape," p. 13.
[8] Hausman, "Eros and Agape," p. 16.
[9] Hausman, "Eros and Agape," p. 17.
[10] Hausman, "Eros and Agape," p. 24.
[11] Hausman, "Eros and Agape," p. 16.
[12] Stearns, p. 204.
[13] Smith, p. 28.
[14] Cf. Smith, p. 27.
[15] Hausman, "Value and the Categories, " p. 221.
[16] Dewey, *Art as Experience*, p. 139.
[17] Dewey, *Art as Experience*, p. 139.
[18] Kaelin, p. 152.

Chapter 6

[1] Dewey, *Art as Experience*, p. 44.
[2] Hausman, "Eros and Agape," p.23.
[3] Hausman, "Eros and Agape," p. 16.
[4] Richard Bernstein, *Praxis and Action* (Philadelphia: Univ. of Pennsylvania Press, 1971), p. 195.
[5] Blanshard, "The Case for Determinism," in *Determinism and Freedom in the Age of Modern Science* (New York: N.Y.U. Press, 1965), pp. 26-29.
[6] See Susanne Langer, *Philosophy in a New Key* (Cambridge, Mass.: Harvard Univ. Press, 1957), p. 54.
[7] Hartshorne, *Creative Synthesis*, p. 3.
[8] Hartshorne, *Creative Synthesis*, p. 293.
[9] Morris, *Signs, Language, and Behavior* (New York: George Braziller, Inc., 1955), p. 194.
[10] Kaelin, p. 152.
[11] Morris, *Signification and Significance* (Cambridge, Mass.: Harvard Univ. Press, 1964), p. 67.
[12] Langer, *Mind: An Essay on Human Feeling* (Baltimore: The Johns Hopkins Press, 1967), vol. I, p. 100.
[13] Langer, *Feeling and Form* (New York: Charles Scribner's

Sons, 1953), p. 27.

[14] Langer, *Mind*, p. 104.

[15] Zeman, p. 250.

[16] Zeman, 252.

[17] Dewey, *Art as Experience*, p. 37.

[18] Dewey, *Art as Experience*, p. 84.

[19] Dewey, *Art as Experience*, p. 85.

[20] Dewey, *Art as Experience*, p. 139.

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