On the Darwinian Character of Veblen's Evolutionary Theory of Economic Institutions

by

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Abstract

Thorstein Veblen's theory and process of institutions and institutional change is principally a matter of habituation and, according to Veblen's post-Darwinian standards of science, is primarily concerned with habit formation, consensualization, legitimization, and conservation (reflex social selection) because these events constitute the complete set of transient terms between the initial cause of instinctive human material and the final definitive effect of human culture and society within the context of his cumulative causation. Furthermore, the dynamics of habituation, characterized as self-continuing and self-propagating consecutive change, are derived from the interaction of the heterogeneous structure of consensualized habits of individual members of the community organized on 'ethnic' lines and the homogeneous social structure of the prevalent, legitimized habits of the community as a whole.

The characterization of Veblen's theory on the basis of its parallels with Darwin's theory of natural selection is unnecessarily narrow and misleading. Firstly, Veblen's use of natural selection processes is restricted to examples of the 'primordial' origins of certain instincts. Secondly, the interaction in the 'schemes' of habits lacks the central operative mechanism of elimination in Darwin's process. Thirdly, this interaction takes place under the conditions of economic surplus where the influence of material exigencies are muted, but surplus arises only when efficiencies are gained under the action of these material exigencies. This reflexive effect is absent from Darwin's process. Overall, Veblen's references to the biological evolutionary sciences are broad and his usage of theoretical concepts insufficiently concentrated and sustained to serve as a basis of characterization. However, it is argued that Veblen's cumulative causation can be characterized as 'Darwinian' in a methodological sense.

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Chapter 1

Introduction

> This use of Darwin's name does not imply that this epoch of science is mainly Darwin's work (Veblen 1908, p. 37).

Thorstein Veblen's theory of economic institutions is commonly characterized as evolutionary in nature and, of late, is more strongly if not exclusively associated with Darwinian evolutionary biology (Harris 1934, Murphree 1959, Edgell 1975, Griffin 1986, Edgell and Tilman 1989, Hodgson 1992). For example, Edgell and Tilman contend that "Veblen's theoretical orientation was influenced primarily by evolutionism; however, it was not the social Darwinism of Spencer ... but rather the biological evolutionism of Darwin", and in this regard, Veblen "was a Darwinian par excellence" (Edgell and Tilman 1989, p. 1005). Hodgson finds that "despite some problems and inadequacies, on the whole Veblen was relatively successful in establishing the basis of a Darwinian economics" and that Veblen should be "placed amongst the founding figures of modern evolutionary economics: perhaps even the greatest of them all" (Hodgson 1992, pp. 296, 298). Edgell and Tilman, in light of the variety of influences claimed to have contributed to Veblen's work, justify their reappraisal by a need to re-emphasize the importance and priority of evolutionism as the main influence on Veblen; Hodgson's re-examination stems from the current revival of interest in evolutionary ideas in economics and the need to establish Veblen's post-Darwinian economics at the head of this stream of thought.

For Edgell and Tilman, and Hodgson, the primary feature of Darwinian evolutionary theory is its process of natural selection[1] and the principal correspondence

[1] In both, Darwinian evolutionism is also associated with non-directed evolutionary patterns of descent. Since the non-directed pattern is in fact implied by Darwin's theory of natural selection, it is acceptable to mention only the latter when both features are of concern.

between Veblen's theory and Darwin's lies in the treatment of institutions as species (Edgell and Tilman (1989, p. 1005), Hodgson (1992, p. 296)). One immediate implication of this correspondence is that institutions are to be treated as evolutionary phenomena, presumably as the product of natural selection or some comparable process. Interestingly, while Darwin's theory of natural selection receives seemingly precise statement — in both papers, the constituent principles of natural selection are individually numbered and presented 'axiomatically' — there is little discussion with equivalent detail on the nature of the selective process operating on Veblen's institutions. Edgell and Tilman suggest that Veblen's process of institutional change may be more effectively treated as Lamarckian in character and that natural selection plays only an eliminative role (Edgell and Tilman 1989, p. 1010). Hodgson details Veblen's process of institutional replication but does not indicate what, if any, the selective or eliminative aspects of Veblen's institutional process might be, thus ignoring the parallel to the central operative and observable aspect of Darwin's theory of natural selection (Hodgson 1992, pp. 292–294). This situation is somewhat paradoxical. If Darwinian theory is identified distinctively and principally by the process of natural selection, then regardless of whether the correspondence between Darwin and Veblen is strict or analogous, the basis of Veblen's Darwinian character must lie in some form of a parallel *selective* process. Thus it is paramount that some selective and eliminative institutional process be identified and elaborated in order to establish the link between Veblen and Darwin. To assert that the substitution of institutions for species is a fundamental aspect of Veblen's Darwinian character without giving primary importance to the selective process is, at best, to assert that institutions and institutional change are evolutionary. The fact of evolution alone is not sufficient to establish Veblen's Darwinian character since there were other theorists of that era who treated phenomena in terms of transformation or transmutation.[2] Furthermore, Veblen's use of the Lamarckian use-inheritance mechanism, recognized by both Edgell

[2]That is, Darwinism is sufficient but not necessary for the characterization of institutions as evolutionary phenomena.

and Tilman, and Hodgson[3] would seem to call Veblen's Darwinian characterization into serious question in the absence of a well-defined and identifiable selective process over institutions.

On the point of Lamarckian processes, Edgell and Tilman, and Hodgson downplay its significance in maintaining the potential use of Darwin's theory of natural selection as a criterion of Darwinian content in Veblen. They cite,[4] identically, Peter J. Bowler, a historian of evolutionary theory, to show that "Darwin himself did not deny a limited role for the inheritance of acquired characters, and he was thus able to admit that the learning of new habits by the animals themselves can play a role" (Bowler 1988, p. 98). Presumably if Darwin used the Lamarckian use-inheritance process to supplement his theory of natural selection then it is still possible to claim that Veblen was essentially Darwinian despite Veblen's use of the same Lamarckian process.[5] To argue that the apparent, minor use of the use-inheritance process should controvert the Darwinian characterization of Veblen amounts to claiming that Darwin was not a Darwinian.

While this seemingly preserves the narrow identification of Darwinism with Darwin's theory of natural selection, it is not entirely clear that this is the most appropriate or useful approach for the purposes of characterizing Veblen's work. First, Veblen himself used the term 'Darwinian' to demarcate modern, evolutionary science from older, taxonomical types as in the terms 'post-Darwinian' and 'pre-Darwinian' respectively (Veblen 1898b, p. 36). It is reasonable to assume that Veblen viewed his own theory as post-Darwinian. It is also clear from his relatively frequent application of this distinction in various contexts — eg. to Marxism, socialism, classical economics, the German historical school, etc. — that his understanding of the term was sufficiently well-defined and robust. However, Veblen warns that "(t)his use of Darwin's name does not imply that this epoch of science is *mainly* Darwin's work" and that it is "by scientifically *colloquial* usage we have come to speak of pre-Darwinian and

[3]Hodgson (1992, p. 295).
[4]Edgell and Tilman (1989, p. 1010), Hodgson (1992, p. 296).
[5]Provided that the selective process exists.

post-Darwinian science, and to appreciate that there is a significant difference in the point of view between the scientific era which preceded and that which followed the epoch to which his name belongs"(Veblen 1898b, p. 36, my emphasis). Thus, the Darwinian character of Veblen's work, as judged by Veblen himself, need not have its basis restricted to a correspondence of his work uniquely to Darwin's. That Veblen qualifies his use of the term suggests that a strict correspondence is unlikely which in turn leads to the question of the nature of Veblen's 'Darwinism'.

Second, Bowler (1983, 1988, 1989) argues that construing Darwin's theory principally as a theory of natural selection is not appropriate nor useful. According to Bowler, this construal of Darwin is a product of the inductive approach to history[6] and is a historically inaccurate presentation of Darwinian theory near the turn of the century. Broadly, an inductive history is written as if history is analogous to the exercise of Baconian scientific method. Events and individuals are sequenced and given significance according to their conformity with the process of accumulating objective and unerring facts. The ultimate end of this history, written as a series of facts and as a strictly ordered series of theories of increasing empirical generality, is the justification of the current textbook view of the subject. In the case of evolutionary biology, the genetical theory of natural selection — a theory which contains many of the same elements as Darwin's original theory of the process — represents the textbook case. Thus, in (re)constructing a history of Darwinian theory along these lines, it is necessary to portray natural selection as the most significant aspect of Darwin's work because it marks the first and most obvious occurrence of a precursor to the modern theory and because it provides a focal point at which to start the induction. Furthermore, because many of the original elements remain intact in the modern version, the transition to the modern form from the original is seen as a series of relatively minor adjustments that do not significantly alter the central and essential character of Darwin's theory. As a result, the introduction of the genetical component into

[6]Also known as the 'orthodox' view of Darwinism.

the process is depicted as 'fine-tuning', not as a major restatement or reformulation. The priority of Darwin's natural selection theory over genetics must be preserved to give continuity to the induction. This emphasis on inductive empiricism and natural selection leads to a distortion of the depiction of late nineteenth century Darwinian theory through the exclusion of competing alternative (and perhaps dominant) concepts, motivating interests, and other significant aspects of scientific activity.

Additionally, Bowler claims that adherence to this idealized, prescriptive scientific method in explaining developments within evolutionary biology encounters difficulties arising from the 'sequencing' requirement. One example of such difficulties is found in the case of Mendel's laws, the foundation of evolutionary genetics and a fundamental component of the modern theory of evolution.[7] Mendel's original work had appeared in 1865, soon after Darwin's *Origin of Species* but the nature of its relationship to Darwin's work is complicated and contentious. Certain critiques raised against Darwin's theory, notably Jenkin's 'blending' argument in 1867, could have been rebutted by Mendel's laws.[8] Those who advocate 'strongly' rational reconstructions of history or who identify rationality as the essence of scientific activity have tended to explain the rise of Mendelism from its role as a solution to Jenkin's critique, thus Mendel's implicit relation to Darwin's work is one of refiner. However, Mendel's original discovery obviously precedes Jenkin's critique so the view that scientific discovery is a rational sequence of progressive empirical generality and improvement is difficult to maintain here. This difficulty in explaining Mendel's laws is compounded by the fact that even after their rediscovery it still required two more decades before their relationship to and their synthesis with the theory of natural selection was recognized and undertaken. Given their supposed significance in the repair of the deficiencies

[7]Another example of a 'sequencing' problem of a different nature is that of the decline of Darwinism in the closing years of the nineteenth century. Since the method of induction is a process of accumulating facts (particularly as confirming instances), the credibility and validity of the theory of natural selection should be monotonically increasing over time. Any 'decline' in Darwinism is counter to the pattern of induction.

[8]As it was eventually but only some time after the rediscovery of Mendel's laws in 1900. Jenkin's critique, a significant element within the orthodox history, will be detailed later.

of Darwin's theory of natural selection — deficiencies that Darwin was well aware of — this delay is unusual. If the rediscovery is portrayed as a rational response to the critique and as a resolution of the problem, then there should have been little or no delay at all.

There are many interesting historiographic questions raised by examining the recent scholarship in history of Darwinian evolutionary biology, but for present purposes what is of immediate significance is Bowler's resolution of the problems arising within the orthodox history, particularly the role of the growth analogy. Bowler starts by rejecting the inductive approach to history. In doing so, facts are no longer taken as the incontrovertible source of scientific truth and are recast as phenomena identifiable only through pre-existing interpretative frameworks. By extension, the mutual interdependence between interpretative frameworks and facts necessitates giving more serious attention and greater influence to pre-existing analytical structures in the analysis of the history of science. In Darwinian evolutionary biology, the dominant interpretative framework for most of the nineteenth century was the growth analogy. A marked disposition towards morphological and pattern-oriented analyses over those directly concerned with processes is encapsulated within this growth analogy.[9] Darwin's work, Bowler claims, contained many elements such as his theory of pangenesis that show the direct and persistent influence of the growth analogy. Moreover, it was in terms of these elements in the context of the growth analogy that the majority of the biologists in the nineteenth to early twentieth century recognized and understood Darwin's contribution to evolutionary biology. With respect to Darwin's theory of natural selection, the influence of the growth analogy and the bias towards patterns and morphology gave emphasis to the adaptive, transformational pattern of linkages between life forms that resulted from the process. Emphasis on natural selection as a material process in and of itself received little sustained attention and was never

[9]Bowler explains this distribution of emphasis as largely due to the sheer complexity of the growth process. Little progress was made in explaining this so attention turned towards more tractable problems although, in principle, the growth process was still of concern.

widely accepted in the nineteenth century. The anomalies stemming from the orthodox history of Darwinism are thus resolved. The need for a direct relationship of Mendel's work[10] to Darwin's stemming from the requirements of rational sequencing is eliminated to a large extent because Mendelism and 'hard' heredity are fundamentally opposed to the notion that growth or the growth process plays any role in the process of heredity or evolution. Because Mendel's works place little significance on the growth process, they were initially ignored. This fundamental opposition between the respective interpretative frameworks also explains why there was the delay in the synthesis of Mendelian genetics and natural selection after the rediscovery of Mendel's work.[11] Lastly, the doubts raised about Darwinism which had reached their highest and strongest expression by the end of the century and which constituted the 'eclipse' of Darwinism, were doubts raised against those elements and interpretations that were largely a product of the growth analogy. Importantly, included among the questionable elements was the Lamarckian use-inheritance mechanism. Natural selection, undeniably part of Darwinism, could hardly be seen as the crux of the matter.

Returning to the issue of the evolutionary character of Veblen's work, if we accept Veblen's qualification in his use of the term 'Darwinian',[12] and if we accept, in principle, the basis of Bowler's reconstruction of the late nineteenth and early twentieth century Darwinism,[13] then to identify Darwin's theory solely with his theory of the process of natural selection and to use this process as a standard in the assessment and characterization of Veblen's theory is certainly questionable and unnecessarily exclusive. The purpose of the thesis is to re-examine, more fundamentally, the basis

[10]Viewed in the traditional manner where Mendel is portrayed as principally concerned with establishing the laws of inheritance. See Callender (1988) and Olby (1979) for alternative formulations and relationships to Darwin.

[11]There were, of course, extra-scientific consideration such as the implication for social welfare policy at play.

[12]Particularly as it applies to his own work.

[13]That is, his rejection of the inductive approach to history and its flaws, and his use of pre-existing interpretative frameworks in general and the growth analogy in particular.

of assessing the evolutionary or Darwinian character of Veblen's work.

Toward this end, three questions are raised to define the content of the research. First it is asked, "What did scientists near the close of the nineteenth century take to be the major thrust or main contribution by Darwin?". Secondly, "What did Veblen understand by the use of the term 'Darwinian'" and third, "How did this compare to the usage by the scientific community in general?". These are not trivial questions. Ernst Mayr, a prominent biologist and philosopher of biology has identified five major components or sub-theories associated with Darwin's theory of evolution (Mayr 1988, p. 187). Charles Singer, a historian of biology, notes that Darwin's *Origins*

> confuses two distinct themes. On the one hand, there is the question whether living forms have, or have not, an evolutionary origin. On the other hand is the suggestion that Natural Selection is the main factor in Evolution. These themes can be and should be discussed independently (Singer 1950, p. 298).

David Hull, also a historian of science and evolutionary biology, notes that at a recent meeting of the American Association for the Advancement of Science, several eminent scientists asked to speak on the shift in perspective on Darwinism from 1959 to 1982 could not agree on what Darwinism was, but each was sure that it has an essence (Hull 1985, p. 773). Hence, there appears to be no clear agreement over the definitive nature of Darwinian theory. The same is the case for Veblen usage. Veblen's Darwinism, aside from referring to Darwin's theory of natural selection, has been described as "a convenient label" into which "he read a whole series of implications" (Murphree 1959, p. 312). In another case, it includes not only natural selection and the Lamarckian process, but also the Mendelian laws of inheritance and the mutation theory of De Vries (Harris 1934, p. 58). Others, of course, contend that Veblen's Darwinism is essentially empty (Knight 1935, p. 209, cited in Hodgson (1992, p. 285)).

To explore the issues raised by these questions, the following procedures will be performed and documented. In the next chapter, a review of the major concepts of evolutionary theory is presented to reintroduce the basic structure of the concepts

and to bring the more pertinent details into sharper relief. Included in the review is a summary of a 'representative' orthodox history of evolutionary biology. To give contrast to the evolutionism particular to the biological sciences, a specialized survey of social Darwinism follows. As will be shown, social Darwinism represents a potentially independent and alternative source of evolutionary concepts. After the discussion of social Darwinism, the details of a recently reconstructed 'alternative' history of Darwinian evolutionary theory are presented. This section will draw heavily from Bowler's research, with special attention and greater emphasis given to the impact of developmentalism and the rise of hereditarian thought. Together, these three chapters provide the material for the assessment of the nature of Darwinism and of evolution as it was understood by the scientific community near the turn of the nineteenth century. Next, Veblen's work is examined to identify and assess the nature of Darwinism as Veblen understood the term and to identify and assess the extent of biological influences. Within Veblen's theory of institutions, the process of institutional change is highlighted to establish the extent of the influence of Darwin's theory as the theory of the natural selection process. Lastly, certain other characterizations of the Darwinian character in Veblen are presented. These include Edgell and Tilman (1989), Hodgson (1992), and Harris (1934) and are critically examined in light of the preceding chapters. A summary of these results and those of the others chapters will close the examination.

Chapter 2

Rudimentary Evolutionary Biology: Theory and History

2.1 Introduction

The purpose of this chapter is to review (or otherwise introduce) the major elements and history of evolutionary biology in order to outline their basic structure, features and relations. The review is not intended to be complete nor intensive.[1] Rather, the review is intended only to bring into sharper relief those aspects which are directly relevant to the present topic and which are sufficient to demonstrate essential distinctions across elements. Included in the review are the Lamarckian and Darwinian evolutionary theories, Mendel's laws of inheritance, and De Vries' mutation theory. Also, I will present an abridged version of a 'representative' orthodox history of evolutionary biology — that is, one centrally and exclusively concerned with Darwin's contribution.

2.2 Elements of Evolutionary Biology

2.2.1 Lamarck's Theory

The Lamarckian theory of evolution[2] consists of three components: the spontaneous generation of simple life forms from inert matter; the active power of nature driving organisms along a pre-determined hierarchical scale of increasing complexity or organization; and a process of adaptation of organisms to new environmental conditions.

[1] Readers interested in such coverage are directed to Dodson and Dodson (1985) for a survey of contemporary evolutionary biology and to Bowler (1984) for a survey of evolutionism.

[2] Adapted from Beckner (1972) and Bowler (1984).

The resulting aggregate pattern[3] of evolution is jointly produced from the 'ascent' along the pre-determined hierarchical scale, which tends toward a linear, singular-branch pattern, and from the specializing action of the adaptive process, which tends toward a divergent, multi-branching pattern. Since Lamarck considered the effect of the environment in the adaptive process to be secondary to the effect of the directive power of nature in producing life-forms of increasing complexity, the overall character of evolution in his theory is non-adaptive and is typified in a pattern with a main linear trunk or branch[4] that is accompanied by minor, shortly-lived divergent branches. That is, Lamarck's comprehensive theory of evolution is more accurately characterized as non-adaptive, however sophisticated the structure of 'side' branching.

In contradistinction, the most well-known feature of Lamarck's theory is his process of adaptation, the use-inheritance mechanism or the theory of the inheritance of acquired characteristics. With this process, the material environment, distinct from Nature, becomes the determining factor by defining the needs of an organism. These needs in turn determine how the body of the organism is to be used. Those parts that are used more vigorously will attract more of the internal 'nervous' fluids; those that fall into disuse attract less and atrophy. Where usage has increased, the additional fluids will either carve out more complex passages in the tissue to increase the size of the organ containing the tissue or lead to the creation of new organs if none are present. Under constant environmental pressure, these changes become permanent in the organism and inherited by the next generation. In conjunction with being the most well-known feature of Lamarck's theory, the adaptive process is, oddly, the least unique component. Similar processes can be commonly found in other writers. The evolutionary theory of Erasmus Darwin, a contemporary of Lamarck, contained a similar process of inheritance (Singer 1950, p. 292). Given that Lamarck's theory

[3]By pattern, I mean that set of ancestral relations of species represented in an abstracted graphical form such as a 'tree' diagram.

[4]Parallel 'trees' are what actually result because each species has a separate creation and main branch — ie. there are no common ancestors. The degree of an organism's complexity or organization is a function of the time that has passed since its spontaneous creation.

was never widely accepted in his day,[5] it seems more appropriate to attribute this process to E. Darwin. Nonetheless, this process is often confused for the whole of Lamarck's views[6] and for that reason, Lamarck's theory is often treated as a theory of true adaptation.

2.2.2 Darwin's Theory

The modern textbook treatment of Darwin's evolutionary theory[7] focuses principally on his theory of natural selection, the process generating adaptive, branching evolutionary patterns, more specifically referred to as (species) descent with modification. This result is determined by the biotic and physical conditions particular to the environment inhabited by a given species population, and is brought about by a process of elimination of disadvantageous variants from the reproductive population. Adaptive evolution in this case is characterized by a divergent, irregular, branching pattern where some of the branches persist over time but do not necessarily form a linear pattern when measured along some scale other than time.

Darwin's theory of natural selection can be derived from five principles. Of these, the three basic premises are: the prodigality premise — all organisms reproduce at rates greater than required to maintain the stock of the adult population; the population stability premise — the size of the adult population is relatively constant; the variation premise — all members of a species differ in some small respect from one another.[8] The remaining two propositions are derived from these three. The first derived proposition, that there exists a 'struggle for existence', is implied by the conjunction of the prodigality premise with the premise of population stability.[9]

[5](Fothergill 1952, p. 77).

[6]Goudge (1972, p. 377), see also Bowler (1984, p. 81). While Lamarck did emphasize the use-inheritance mechanism at points, it alone as the primary mechanism could not produce the linear evolutionary patterns that was his main interest.

[7]Adapted from Dodson and Dodson (1985) and Beckner (1972).

[8]These differences can be classed, exhaustively, as advantageous, neutral, or disadvantageous with respect to reproductive success in a given context.

[9]Darwin (1966, p. 63). This is Malthus' arithmetic food supply growth vs. the geometric reproduction rate expressed somewhat differently.

Given that the number of progeny exceeds the number of adults and that the number of adults is relatively constant (due to the constraints imposed by the limitation of food supply), some of the progeny must die off in the ensuing struggle to survive into adulthood. The second of the set of derived propositions, that there occurs the 'survival of the fittest' variants, is implied by the conjunction of the variation premise with the 'struggle for existence' proposition.[10] If there exists a struggle for existence and to the extent that the given environment in which the struggle occurs confers some relative advantage to some but not all of the species variants, then some if not all of the surviving variants will carry this advantage and succeed in reproducing itself.[11]

The five premises or principles taken in conjunction, define Darwin's natural selection process but further assumptions are necessary to clarify and establish its relationship to species evolution.[12] Darwinian evolution, or descent with modification, requires a presumption that advantageous characters are heritable. Moreover, to ensure that evolution is adaptive, some of the individual traits and characters must be presumed to be independent from each other with respect to inheritance and, further, the inheritance process must preserve, to a significant extent, the nature of the advantageous character. Then by allowing sufficient time and constancy in environmental pressure and conditions, species descent with modification occurs. Thus linked by the pattern of descent, natural selection also specifies how species relationships are explained and compared. Species divergence must be explained only by the accumulated advantageous hereditary differences, and species similarity only by the common inheritance of advantageous hereditary differences or the descent from a common

[10]Darwin (1966, pp. 81–82).

[11]Darwin's original formulation suggests that all of the surviving adults will carry the advantageous trait. The modern formulation requires only that the adult reproductive population show an increase in relative frequency of the favored variant.

[12]Although the processes behind the additional assumptions were not well understood in Darwin's time, their general features and results were taken for granted. For instance, heredity was not well understood but the notion of 'soft' heredity was implicit in Darwin and generally accepted by his contemporaries. These were considered matters of common sense and observation.

ancestor.[13] Comparisons of existing species do not refer to one as a pre-existing stage of the other.

2.2.3 Mendel's Laws of Inheritance

The Mendelian laws of inheritance[14] consist of two propositions, referred to as the principle of segregation and the principle of independent assortment, to which the patterns of trait (or character) transmission across immediately successive generations of sexually reproducing organisms are reduced. These laws take the form of 'rules' according to which the more elementary 'components' of traits separate from the parents and recombine in the offspring. In contemporary textbook formulations of the laws, each trait or (unit) character is determined by the type-combination of its constituent pair of alleles — the fundamental units of heredity in Mendelian theory that are of various 'kinds'. When the types of the alleles are alike in the pair (homozygous), the resultant type of the trait observed in the offspring is that of the alleles; when unlike (heterozygous), the result is determined by whether the alleles stand in a 'dominant-recessive' relation. If not, the result is intermediate between the two unlike alleles; if there is this additional relation, the resultant trait is of the dominant allele type.[15] The first of the two laws of inheritance describes how the alleles are contributed and recombined in the reproductive process. The principle of segregation states that for each trait, the alleles segregate so that one parent's contribution to any one offspring consists of one allele per trait (one half of the alleles that each parent has for any given trait), which results in the required two alleles per trait for any given offspring.[16] The second law, the principle of independent assortment states that the results from the process of separation and recombination of alleles for any

[13]Which reduces to an explanation by common inheritance of advantageous hereditary differences when pressed.

[14]Adapted from Dodson and Dodson (1985) and Ruse (1989).

[15]This last case produces the historical 3 : 1 ratio result when neither parent carries like alleles pairs for the trait in question — ie. hybrid parents.

[16]Ruse (1989, pp. 13–14).

one trait are not affected by the process and results of separation and recombination for any other trait.[17]

Mendel's original formulation differs from the modern[18] case in some important respects. One pertains to the level of analysis in the modern version which takes place at cellular level or lower. In contrast, Mendel adopted a morphological perspective by treating life-forms as a whole in his analysis despite working with separate traits. His laws of inheritance were largely descriptive rather than explanatory in nature, dealing more with population proportions and lacking reference to any underlying process of actual division and recombination.[19] This raises the question of the object of Mendel's principle of segregation. In Mendel's own writings there is little direct evidence that he thought of the heredity process in terms of paired trait 'particles', implying that the basic concept of the gene was absent. The concept of the gene as a material phenomena was first introduced in the twentieth century and initially it was loosely associated with particulate material within certain cells. Later, the gene became linked to the chromosome (nuclear material present in all cells) and later still, through the techniques of mutation mapping and mutation production, further specified to particular positions along the chromosome. The last major development regarding the nature of the gene shifted its material basis to a chemical basis with the introduction of the DNA molecule.[20] [21]

[17]Ruse (1989, p. 14). Strictly speaking, the principle of independent assortment is false as it is sometimes violated due to the linkage and the position effects. In most cases it is true.

[18]That is, twentieth century.

[19]See (Callender 1988).

[20]A contemporary definition reflects the shifting view on the gene. In reverse historical order, it is defined as "(t)he basic unit of inheritance, comprising a specific sequence of nucleotides (a chemically defined sub-unit) on a DNA chain, that has a specific function and occupies a specific locus on a chromosome; alternative forms of a gene are known as alleles; genetic factor" (Lincoln, Boxshall and Clark 1982, p. 99)

[21]Linkage and position effects are well-defined once the trait particles are interpreted in terms of the material gene. Linkage is due to the interdependency that results from a certain physical grouping of genes (trait alleles) for different traits, on the chromosome. The position effect is defined as the case where the dominance character of a 'gene' is dependent on its position along the chromosome.

2.2.4 De Vries' Mutation Theory

De Vries' mutation theory[22] is the result of the attempt to explain the evolution of species as a product of sudden large-scale 'macro-mutations' or variations and is thus characterized as a theory of discontinuous evolution. Following soon after De Vries's rediscovery of Mendel's laws,[23] it was popularly accepted when introduced but under scrutiny lost much of its appeal and is now only of historical interest. Its original appeal was the result of the perception of the theory as a generalization or extension of Darwin's theory. Increasing doubt arose from the absence of additional instances of De Vries' evolutionary 'phenomena' beyond his test case, which is not surprising since his interpretation was incorrect. From cross-breeding two strains of the evening primrose flower (*Oenothera lamarckiana*), De Vries had observed three different types of offspring which were sufficiently different amongst themselves and from their parents to be considered as new species. Based on these observations, De Vries constructed a taxonomy of mutations where each class is differentiated on the basis of the magnitude of mutations or variations and is associated with a particular process and pattern of inheritance and evolution. In the case of large-scale mutations, the cause was largely left unexplained and described as occurring randomly,[24] but they were, nevertheless, the only type given evolutionary significance. With respect to inheritance patterns they display little relation to their parents because large-scale mutations generate new, and thus dissimilar, species within one generation.[25] Mutations of the second category were less drastic and do not constitute the emergence of a new species immediately or necessarily. These variants were conjectured to be the product of an earlier large-scale mutation that had subsequently become latent and were treated as

[22] Adapted from Allen (1975) and Nordenskiöld (1935).

[23] De Vries was one of the co-rediscoverer of Mendel's laws, along with C. Correns and E. Tschermak, but the laws were not incorporated into his mutation theory.

[24] The degree to which this is seen as a deficiency is dependent on the degree to which the model or theory treats 'probabilistic' phenomena as legitimate. For example, compare the debates regarding classical, Newtonian vs. quantum mechanics.

[25] Also, by definition, these offspring could not be crossed with their siblings of a differing species type.

a case of potential evolution. Evolution would occur in this case only if the latent large-scale elements 'accumulated' to form new species. Inheritance from parents to offspring is observed to the extent that the offspring does not manifest the latent mutation across any one generation. The third category of mutations are the small-scale variations relevant to Darwin's theory. Under, De Vries' treatment, natural selection does operate on these mutations to eliminate the unfit but the process could not give rise to new species because the size of the variations is too small to be accumulated to significance.[26]

2.3 The Orthodox History of Darwinism

Current research and perspectives on the history of Darwinian evolutionary theory[27] has substantially shifted away from the 'orthodox' inductive interpretation. This shift is not complete nor has it been widely disseminated into other areas of historical research. Peaking in popularity in the mid-twentieth century and known to specialists as the Franciscan interpretation,[28] the orthodox interpretation remains an influential body of research, particularly in its more sophisticated forms — ie. conventionalist histories. At the very least, it serves as a point of departure and contrast for the results of the contemporary work. Thus, a brief outline is presented in this section. The distinctive feature of the interpretation is the role of inductive scientific methodology. Adherents of this approach model the history of science as a patient amassing of facts, unprejudiced by pre-existing theories and marked by a prudent avoidance of unfounded speculation. The implications from adopting this method are discussed prior to the presentation of the standard history to highlight their impact and to aid in the identification of their influence.

[26]Mainly because of Lord Kelvin's critique of Darwin's theory and the problem of sufficient time.

[27]This is distinguished from the history of Darwinism in which social issues receive greater emphasis. The principal interest in this chapter is the history of evolutionary science which from the orthodox perspective is the history of Darwinian theory.

[28]The source of this label is due to the disproportionate reliance early historians of evolutionary science placed on Francis Darwin's account of the events in his father's life (Hodge (1985, p. 207), Bowler (1988, p. 22)).

The inductivist approach to history is a product of Bacon's philosophy of science, according to which "scientific theories emerge from the facts" (Agassi 1963, p. v). The history of science becomes the history of the proper application of this empirical method in which the open-minded observation and recording of facts is the primary technique. Two results follow from the adoption of this technique as a basis for historical research. First, because inductive fact collection is cumulative, the constructed history is linear and continuous; less general theories must strictly precede more general ones for a proper ordering with respect to empirical content (Agassi 1963, p. 12). Secondly, given the focus and importance of the scientists' behavior, scientists in history become divided into two categories: the right and the wrong, the scientific and the superstitious, the open-minded and the dogmatic, the observer of facts and the speculant (Agassi 1963, p. 1). The determination of which scientists fall into which category is based on the contemporary, up-to-date textbook. Since the contemporary textbook version of any given theory is also viewed as having been derived from the application of this same proper method, the objective of such histories of science becomes the cataloging of the historical sequence of discoveries and the accumulation of 'brute' facts in order to validate the textbook case. Thus working back through time, significant events (ie. discoveries) and individuals are easily identified — they are ones that agree with the textbook case. That is, "(t)he simplest formula for an inductivist history of science is to arrange the up-to-date science textbook in chronological order, to describe some of the circumstances surrounding the occurrence of an important event in the history of science, and say something about the chief actors involved in that event; in short, to provide the human side of the history of science" and for the inductivist historian, the main interest becomes one of chronology and giving marks to past scientists (Agassi 1963, pp. 2, 7).

The emphasis on the behavior of scientists is a result of the relation between facts and theory in this philosophy of science. Since facts are considered the ultimate and exclusive source of (true) theories, any errors within the 'theory' must be attributed

to something other than facts, since facts are the only sources of truth. Thus errors are attributed to flaws in the observation process — ie. a failure of objectivity in the scientist.[29] To maintain objectivity, all subjective bias and its sources must be kept in check. The impact of this methodological prescription on the orthodox history of science is to deny the role of theoretical frameworks as necessary pre-existing conditions to 'fact' identification, observation, and interpretation and to exclude discussion on the role and contribution of opposing or competing schools of thought in the generation and constructions of ideas. Pre-conceived theories represent subjective bias and would prejudice observation. Aside from the fact that opposing and competing theories are viewed as the result of improper method, they are also excluded on the grounds that they do not directly contribute to the amassing of facts (Agassi 1963, p. 23).

No work by a single historian of evolutionary biology is regarded as the standard orthodox history but certain ones do come closer to the ideal. The following summary is a reconstructed 'representative' case and draws mainly from De Beer (1963). De Beer's work appeared at the height of the popularity of the Franciscan interpretation. Some of the more current elements of the orthodox interpretation have been added to the summary.

Darwin began his formal education at Edinburgh in medicine which he quickly abandoned due to disinterest. During his time at Edinburgh, Darwin found little in his studies useful for his later work. However, according to De Beer there was one important incident. While assisting in some field work, Darwin, in naivety, announced a finding and was quickly accused by the research leader of infringing upon his work. He was given "the experience of a scientist staking out his claim for priority" (De Beer 1963, p. 27). He later attended Cambridge with similar results: his formal studies were of little interest and he learned another important lesson — that is, not to

[29]Given that bias is discrete, scientists must be sharply distinguished as 'pure' white or 'pure' black as any contamination of their objectivity is fatal to induction (Agassi 1963, pp. 1, 3).

be "'in such a hurry to communicate my discoveries'"[30] (De Beer 1963, p. 30). At Cambridge, Darwin took an interest in natural history and the descriptions of species adaptation found in Paley's *Natural Theology*. In these accounts, adaptation was a product of divine design. Darwin shortly came to reject these accounts but maintained his interest in the phenomena of adaptation (De Beer 1963, p. 29).[31] His interest in natural history eventually led to contacts with Henslow and Sedgewick, professors in the fields of botany and geology, and to an informal education as a naturalist (De Beer 1963, p. 30). From this contact, De Beer claims, Darwin received another important lesson — that "science consists in grouping facts so that general laws or conclusions may be drawn from them" (De Beer 1963, p. 31).[32] This training was sufficient to obtain the position of naturalist on HMS *Beagle*.

After some initial delay, the expedition moved ahead. During the early part of the trip, when Darwin landed at the Cape Verde Islands, he was much enthused by what he saw. Darwin records "'(i)t has been for me a glorious day, like giving to a blind man eyes'"[33] (De Beer 1963, p. 38). After reaching the waters off of west Africa, the journey across the Atlantic Ocean began. This part of the journey was mainly uneventful. Darwin's social contact was limited and involved sharing the mess with the captain of the *Beagle*, Captain Fitzroy, with whom Darwin disagreed. Fitzroy was outspoken on slavery and subscribed to Lavater's physiognomy[34] (De Beer 1963, pp. 33, 40–41). Of greater significance is the impact of Lyell's uniformitarian geology on Darwin and the implications it had for the creationist explanation of the geographical distribution of species (De Beer 1963, pp. 41, 57, 83). Lyell's geology would allow Darwin to reject catastrophism, the idea that the history of the earth is

[30]This and the previous lesson are intended to show that Darwin would develop a cautious and patient manner in his research.

[31]Thus, Darwin would not be prejudiced by creationism in later research.

[32]Whatever the extent of Darwin's formal scientific training, it would at least include exposure to the inductive scientific methodology.

[33]Presumably, De Beer intends to highlight the development of Darwin's heightened observational abilities.

[34]This was mentioned earlier by De Beer. Darwin is again disassociated from pre-conceived and incorrect ideas.

marked by periodic violent upheavals (De Beer 1963, pp. 70, 78). Moreover, Lyell's methodology required that explanations of the past be grounded in processes that are observed and operate in the present. This would fundamentally shape Darwin's views on the nature of natural history and time.

After crossing the Atlantic, Darwin began the most intense part of the expedition. He would make many detailed observation on a broad range of subjects. The most important of these occurred at the Galápagos Islands. What Darwin observed here represented an extreme example of the problems that he saw facing the creationist explanation, namely the case of species distribution of land and marine birds on the Galápagos Islands.[35](De Beer 1963, p. 50). He observed that of the twenty six species of land birds and eleven species of marine birds found on the islands as a whole, twenty one of the twenty six, but only two of the eleven, species were endemic — ie. native to a specific geographical region, in this case a particular island. To explain this by creationist standards, there needed to be a separate act of creation or miracle for each island. Given each island's proximity to the others, Darwin could not accept this account and would become convinced that adaptive evolution must be the case. However, he was without a process or mechanism to explain how the adaptive evolutionary pattern is achieved.

Once home, Darwin began his search for an adaptive process. He turned to the experiences of the animal breeders. Here he found that artificial selection could produce new varieties (De Beer 1963, pp. 96–97). From a domestic population containing random variants, a breeder would select those variants showing the desired character. Through the process of repeated selection of variants from the subsequent generations following from the original selected pairing, the desired characters could be strengthened and fixed within the animal. Drawing on this example, Darwin sought

[35]This is a central event in the orthodox interpretation. It survives in the modern textbook as the key theoretical problem occupying Darwin before his discovery. The elaboration in the following main text is from Dodson and Dodson (1985) The suggestion in De Beer is that the circumstances at the Galápagos provided Darwin a well-defined and controlled experiment in which to crucially refute creationism.

a functionally equivalent selection process which he soon found in Malthus' principle of 'the struggle for existence' (De Beer 1963, p. 100). In this process, better adapted individuals would do better in the struggle than their rivals and would survive to pass on these adaptive advantages. The theory of natural selection could now be put together. The details of the theory were worked out by 1844, but the theory was not released until 1859 (De Beer 1963, p. 133). The delay is explained by Darwin's desire to build his scientific credibility (De Beer 1963, p. 136).

When released in 1859, *The Origins of Species* attracted much interest and was followed by a period of intense debate and scrutiny of the text. Several arguments were raised. There was the critique that no direct evidence for the effectiveness of natural selection nor the origin of new species had been put forth; that no species was shown to be intermediate between any two known species; that complex organs are useless if they evolved in gradual stages; that natural selection did not account for 'obvious' linear trends and was thus incomplete; that the age of the earth is too short for evolution to have occurred; and that evolution was contradicted by its laws of inheritance.[36] Of these, two are most important to the orthodox interpretation. The first was Lord Kelvin's critique based on the age of the earth (De Beer 1963, p. 174). Kelvin used temperature calculations to estimate the age of the earth. The result was too short for present forms to have evolved. Although the calculations were incorrect, Darwin could not have known this, or at least could not he have shown otherwise. In the hopes of speeding up the evolution process, Darwin incorporated the Lamarckian adaptive process (Eiseley 1958, p. 240). The second, and the more serious of the two was Fleeming Jenkin's 1867 critique that the blending theory of inheritance contradicted natural selection (De Beer 1963, p. 175). Jenkin had pointed out that the blending theory of inheritance implicit in Darwin's theory rendered natural selection inoperative because any advantageous trait that would be passed on would also be blended. The dilution of character in the process could not lead to

[36]The order here is not indicative of significance.

the preservation of the advantageous trait over the period of time required because subsequent interbreeding would further dilute its character. This critique furthered Darwin's interest in the Lamarckian adaptive process (De Beer 1963, p. 215). This critique would remain a significant problem for Darwin's theory and would reach its greatest influence near the turn of the century. However, it would be rebutted by the use of the Mendelian laws of inheritance after their rediscovery in 1900.

2.4 Summary

This chapter has provided a brief review of those basic elements of evolutionary biology and the orthodox history of evolutionary science that are necessary for the purposes of assessing the nature and status of Darwinian theory at the turn of the century. The scope of the review is not directed towards completeness. Instead, items judged to be most relevant and useful towards an assessment of Veblen's work have selected. The 'textbook' treatment of the Lamarckian and Darwinian evolutionary theories have been included as well the Mendelian laws of inheritance and De Vries' mutation theory. The sketch of a representative orthodox interpretation of history of Darwinian theory is presented to provide a convenient point of departure and a basis of comparison. It also introduces and identifies certain historiographical issues relevant to the contemporary research in the history of evolutionary science.

Chapter 3

Social Darwinism

3.1 Introduction

It is claimed that Veblen attempted to apply the principles of evolutionary biology to social and economic phenomena to construct an evolutionary social science.[1] If so, he was neither alone nor first in this pursuit. However, implicit in the opinion of these commentators mentioned in the opening chapter is the view that, with respect to Veblen the borrowing of evolutionary principles occurred strictly from the biological to the social sciences. Nonetheless, it has been noted that the writings of certain social Darwinists contain evolutionary elements which appear not to be entirely rooted in biology. Moreover, the first use of the notion of evolution within the formal sciences appears to have occurred in the physical sciences in the guise of the second law of thermodynamics. Thus a more bilateral relationship of conceptual borrowing is possible.[2] To the extent that evolution as it was understood at the turn of the century is not strictly a biological concept — whether by the reciprocal exchange of ideas or by its use in a form arising from sources strictly autonomous from biology and natural history — the prior view of the relationship and sources of Veblen's evolutionism requires re-examination. A survey of the social Darwinists, which includes some of Veblen's near contemporaries, is presented to provide a basis for contrast and comparison and as background to later analysis. This survey is cursory and, for simplicity's sake, focuses only on those particular individuals whose intellectual relationship to Veblen is easily established. The works of Herbert Spencer and William Sumner are highlighted in this section. As background, the discussion

[1] Recall the discussion in chapter one.

[2] Either between the physical and biological sciences, between biological and social sciences, or between the social and physical sciences.

is preceded by a summary of the more recent debates regarding the nature, extent, and role of social Darwinism.

3.2 Defining Social Darwinism

In the most general sense, 'social Darwinism' pertains to the application of Darwinian theory to the human domain. So construed, Darwin himself could be labelled as a social Darwinist.[3] More commonly the term is used to refer to more specific applications of Darwinian concepts such as those where there is greater emphasis on the methodological primacy of the individual, where the preservation of the distinction of man and animals is founded on the uniqueness of the human mind or morality, or where there is a general optimism towards the overall results of a social Darwinian process for example. Consensus regarding the nature and extent of social Darwinism and who might be reasonably included in this circle has varied. According to Richard Hofstadter, arguably the first authority on the subject,[4]

> in America, it was those who wished to defend the political status quo, above all the laissez faire conservatives, who were first to pick-up the instruments of social argument that were forged out of the Darwinian concepts. Only later, only after a style of social thought that can be called 'social Darwinism' had taken clear and recognizable form, did the dissenters from this point of view move into the area with formidable arguments (Hofstadter 1955, p. 6).

The members of the latter group, these dissenters "did not quarrel with the fundamental assumptions" of Darwinism and their application to society but "attempted to wrest Darwinism from the Social Darwinists by showing that its psychological and social consequences could be read in totally different terms" (Hofstadter 1955, p. 6). Thus, in terms of priority, social Darwinism has laissez faire connotations though it can also be applied to later reform-oriented uses of evolutionary principles. Commonly, it is understood as in the first case. Hofstadter points to Herbert Spencer and

[3] His *Descent of Man* explicitly deals with this issue.

[4] Hofstadter's work represents an extension of the research undertaken in the 1940s at Columbia University by such people as Jaques Barzun (*Darwin, Marx, and Wagner* 1941), Thomas Cochran and William Miller (*Age of Enterprise* 1943), and Merle Curti (*The Growth of American Thought* 1943). This body of research represents the first attempts to define social Darwinism comprehensively.

William Graham Sumner as members of the conservative category and Lester Ward as a dissenter. It is important to note that while it was Spencer who first brought evolutionary social theory to America and popularized it, not only amongst intellectuals but the society at large, it was the enthusiastic adoption and vigorous espousal by the so-called 'robber barons' — the Rockerfellers, Carnegies, Vanderbilts, etc. — that indelibly characterize conservative social Darwinism in America.[5]

On the point of conservative social Darwinism, Cynthia Russett demurs. She finds that while the social Darwinists certainly "drew on Darwin and even more on Spencer to adapt the struggle for existence and survival of the fittest into a paradigm for the behavior of men and nations," it is not necessarily the case that laissez faire conservatives were much influenced by Darwinism (Russett 1976, p. 89). More strongly, "(s)ubsequent scholarship has cast doubt ... on the picture of American businessmen as Social Darwinists who seized on the theories of Darwin and Spencer to cloak their rapacity" (Russett 1976, p. 93). For Russett, social Darwinism had generated sustained interest in the more intellectual circles, being more a matter of theory than practice (Russett 1976, p. 96). To be sure, there were a few businessmen — Andrew Carnegie being the primary example — who justified their actions by recourse to Spencer's philosophy but they were not representative of the group.[6] The majority of businessmen in fact held a social philosophy where "success came to those who mastered themselves, who triumphed over self-indulgence, sloth, intemperance, extravagance, and greed within their own bodies, rather than trampling over the bodies of their competitors" (Russett 1976, p. 94). They tended to see their successes as leading to success for all, counter to the competitive zero-sum results of evolutionism. And lastly, "(b)usinessmen, as professing Christians, were unable to accept the harsh egotism of the Darwinian universe[7] (Russett 1976, p. 95).

[5](Hofstadter 1955, pp. 31–33).

[6]Carnegie's position is much closer to Spencer's than to Darwin's. To wit, "From the lower he (Man) has risen to the higher forms, and there is no conceivable end to his march to perfection" (Carnegie [quoted in Hofstadter 1955, pp. 45].).

[7]Russett does note that often the behavior was not quite Christian, but it was far from Darwinian.

A clear distinction between the influx of continental Darwinism and the American *response* to this influx can be discerned in Russett's analysis. Social Darwinism, understood as a doctrine of "weeding out the weak," is generally used by Russett to refer to the earlier, largely British, more strongly individualistic forms of social theory resulting from the application of evolutionary principles to human society. Social Darwinism is principally Spencer's evolutionism. American social Darwinism (or perhaps American social evolutionism), on the other hand, is much more eclectic, being the product of various reconciliations and syntheses of the Darwinian ideas with those that were emerging independently from domestic intellectual problems and issues. The civil war — aside from preoccupying the American 'mind' and restricting the initial impact of Darwin in the 1860's — had raised questions regarding the necessity of war as the final result derived from the Lockean premises of individualism (Russett 1976, p. 86). Escalating industrialization and urbanization to levels previously unknown in the American experience created highly complex and interdependent societies. Decentralized local production became less viable in the wake of increasing specialization. The expansion of transportation, and later communication, networks would further erode local autonomy. All the while the 'pull' of the cities had produced population densities that would eventually overload their systems of social services and diminish the sense of community. The impact of these events was to create a greater need for concepts and analyses of society that would expand and elevate the role of the social 'collective' beyond the usual laissez faire caricature. In Russett's words, "(w)hat was needed, then, was a theory of society and of the individual that would end the opposition between the two concepts, that would cease regarding one or the other of them as artificial, that would, in short, reintegrate man with his environment, using Darwinian concepts to refute the Social Darwinians"[8] (Russett 1976, p. 97).

[8]This is not suggest that social theory is the only field affected. The reconciliation and synthesis of evolutionary ideas and those arising from the American circumstances is not restricted to social theory but include theology and metaphysics.

In Robert Bannister's analysis of social Darwinism, he also considers Hofstadter's analysis of conservative social Darwinism inaccurate. Similar to Russett's findings, he concludes that if he were to 'count heads', he would find few substantiated cases, in Hofstadter's sense, of laissez faire social Darwinism in America (Bannister 1979, pp. 8). However, Bannister is less perplexed by this fact and the issue of who rightly is a social Darwinist — the questioning of Hofstadter's definition has some history — than with the *myth* of social Darwinism. Sociologists such as Frank Hankins, Bert J. Loewenberg, Albert Keller,[9] and Edward Corwin had previously raised questions concerning the imprecision in definition, absence of a distinction between Darwinism and Spencerianism, and the paucity of examples (Bannister 1979, p. 5). Bannister's central concern is why the term 'social Darwinism' should come to have the connotation and influence that it apparently does despite the fact it never achieved extensive adoption as a social theory or philosophy. If Darwinism is defined so that its impact on social thought could be clearly and singularly distinguished, then the "basic question of any study of social Darwinism in American thought are: did such a change occur in postbellum American thought, and if it did, when and where did it occur, and who was responsible for it?" (Bannister 1979, p. 8).

On the matter of definition, Bannister eschews scope. Hofstadter's Darwinism includes not only Darwin's concepts of natural selection and his usage of the 'struggle to exist' principle but also Spencer's notions of the survival of the fittest, of mechanical evolution, and of social organicism, Lamarck's use-inheritance, and eugenics. Bannister includes only Darwin's contributions and identifies the single most important feature following from the *Origins* as it applies to 'social speculation' as the undermining of the "assumptions of harmonious, mechanical, self-regulating laws of nature" (Bannister 1979, p.9). Social Darwinism thus connotes the application of the concepts of struggle and selection as the agents of chaotic and disorderly change

[9]William Sumner's successor at Yale.

or progress[10] in human society. At the center of this result is the governing assumption "that men shared *natural laws* with the rest of Creation"[11] and the debate is a matter of the type of natural law shared. To assess whether social Darwinism and, more importantly, the *myth* of social Darwinism had any impact, one must examine whether during the late nineteenth century and early twentieth century it was to "prevent and undermine the basic American commitment to equality, natural rights, self-evident truths, and self-regulating natural laws — and had, in effect, restated Hobbes against the prevailing Lockeanism" (Bannister 1979, p. 8).

If the principal result of Darwinian theory is disorder, as Bannister claims, then 'business Darwinism' by Hofstadter's account hardly fits the description of social Darwinism. The claims of the laissez faire conservatives and utilitarians stressed co-ordination and equilibrium. The optimistic individualism and progressivity of Spencer's evolutionism is less identified with actual American industrialists than with the "*myth of Social Darwinism* — the charge, usually unsubstantiated or quite out of proportion to the evidence, that Darwinism was widely and wantonly abused by forces of reaction" (Bannister 1979, p. 9, see also p. 10). The lasting effect of Darwin's *Origins* on social thought takes the form of 'reform' Darwinism, popular from the 1880s onward (Bannister 1979, p. 11). The common characteristics of this form of Darwinism is its attention to the notions of intellect and culture primarily as a means to differentiate humans from animals and as a means by which they transcend nature and elude the outcomes of Darwinian evolutionary theory. Most importantly, reform Darwinists are responsible for constructing the stereotype or *myth* of social Darwinism in arguing for greater governmental regulation and social welfare under the treat of Darwin's 'brutal laws'.

In a more recent examination of evolutionary biology in American social thought, Carl Degler examines the question of human nature and traces the shift away from

[10]Bannister notes that Darwin, along with A. R. Wallace and T. H. Huxley, held the view that nature provides no guide to ethics or social policy (Bannister 1979, p.9).

[11](Bannister 1979, p. 8).

biological explanations during the twentieth century and ends with the current rising interest in sociobiology (Degler 1991). His work is different in that the nature and extent of the application of biological principles to social phenomena is not what is at issue but rather it is the nature and extent of the expulsion of biological concepts by concepts of culture and intelligence. However, while he does not comment on Hofstadter's thesis, his analysis is in harmony with Russett's and Bannister's at several points. He identifies early social Darwinism with the views of Spencer and those defending the social and economic status quo rather than Darwin himself and he notes that 'social Spencerism' is perhaps more apt a phrase (Degler 1991, pp. 11, 12). He directs his research towards the views of an emerging group of sociologists, psychologists, economists, and anthropologists; these rising social scientists certainly did not share these views. Their objective was to "show that evolution and Darwinism encouraged co-operation and cohesion in society rather than conflict between groups, as Social Darwinism taught" (Degler 1991, p. 14).

In light of this review, an assessment of social Darwinism for the purposes of examining and characterizing potential sources of evolutionary concepts in Veblen's theory of institutions must include the work of Herbert Spencer and William Graham Sumner. Spencer's evolutionism, whether adopted in fact or in caricature, more accurately reflects the core ideas and ideology of social Darwinism. Sumner's work is examined not only because he was considered the dean of American Spencerism but also because Veblen had been his student.

3.3 Spencer's Theory of Evolution

Spencer's theory of evolution[12] can be described by its three principal features; the metaphysical adaptive force, the specific mechanism of evolution, and its resulting pattern. As a whole, they form a tightly logical structure from which the resulting evolutionary pattern is a deduction, and culminates in a single principle known as

[12]Adapted from Kaminsky (1972), Peel (1971) and Wiltshire (1978). Spencer's output is extensive and it is an important fact to bear in mind when interpreting a particular aspect of his work.

the law of Evolution and Dissolution: "Evolution is the integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity; and during which the retained motion undergoes a parallel transformation" Spencer (1862, p. 396, quoted in Wiltshire (1978, pp. 195–196)). Being a deduction from metaphysical principles, this description of the changes that objects undergo in the process of evolution is universal in its scope — it describes all entities, elemental and in the aggregate.[13]

Spencer's metaphysics entails a sharp division between the phenomenal and the noumenal; science deals with the former and the character of its knowledge is a partially unified knowledge of the perceivable; thus, while dealing with generalizations, these generalizations are not absolutely universal in scope. Philosophy (or metaphysics) deals with absolutes and its knowledge is completely unified. Its generalizations are complete, however they also are beyond the limits of human perception and thus pertain to the 'Unknowable'. Included with the 'Unknown' is the 'Unknown Cause' and from the latter, the ultimate philosophic deduction is 'Force' but this is inconceivable without the notion of cause and effect. This 'Force' is the ultimate motive force or cause in universal evolution and combined with the notion of cause and effect, it is the ultimate term to which all phenomena are to be reduced to. The reduction to Force is often stated as the 'Persistence of Force' or the 'Conservation of Energy', thus it gives Spencer's metaphysics a physical or mechanical aspect through its similarity to the laws of thermodynamics. However, Spencer noted that this interpretation would give science primacy over metaphysics. What was intended was something closer to the idea that causality is universal Spencer (1862, p. 176, quoted in Wiltshire (1978, p. 195)). That is, science is taken only as an instantiation of the philosophical. Nonetheless, the similarity is not easily dismissed (Peel 1971, p. 140).

If Spencer's evolution is characterized as mechanical, it does not restrict the scope of its application. Its mechanicalism refers to the deterministic nature of the theory.[14]

[13]Such as societies.

[14]That is, in the Laplacean sense. Once the position and motions of all things are known at a

An example of the application of Spencer's evolutionary principles to biological phenomena is found in a comparison of amoeba to humans. Amoebas are single cell organisms and thus homogeneous in the sense that the body of the organism is relatively undifferentiated or that there are few relatively well-defined parts. This homogeneous mass must perform all functions necessary to maintain life. Humans, on the other hand, are heterogeneous because their bodies are comprised of well-defined parts. Each part performs a more specialized function in the over-all process of life, thus the human as an organic whole is said to be highly integrated or functionally complex.

Between the metaphysical premises and the pattern of specializing division and structural interdependency stands the mechanism, the nature of which is closely bound to the evolutionary pattern. For Spencer, differentiation also implies integration and conversely since "evolution proceeds through the equilibration of antagonistic forces" and is "reflected in the reconciliation of seeming opposites like increasing differentiation and functional unity" (Wiltshire 1978, p. 196). In the socio-biological case, the evolutionary mechanism that Spencer employs is a blend of Lamarckian and Darwinian elements (Peel (1971, pp. 136, 141), Wiltshire (1978, p. 193)). Hence, differentiation or specialization occurs because it is adaptive; it provides an advantage in the form of increased productive efficiency through the division of labor[15] (Peel 1971, p. 137). But despite the fact that the process was adaptive, Spencer claimed that it was neither telic nor directed toward final goals of the whole (Kaminsky 1972, p. 525). The process of evolution occurs in finite space and time thus the objects of evolution are born, achieve some transient states, and then die. The question of the evolution of the universe as a whole, the question of a single end towards which all things tend is in the domain of the Unknowable.

The action of the Lamarckian process is readily adapted into Spencer's framework. Differentiation is compatible with Lamarckian use-inheritance because the direct ef-

point in time, all future positions and motions are determined from a single law.

[15]Peel claims that Adam Smith was Spencer's first influence and then Malthus (Peel 1971, p. 138).

fects of the environment are conceived as a set of different forces and conditions which act simultaneously on the body. The compatibility with Darwinian natural selection is less so because Spencer's principles do not explain variation across organisms (Peel 1971, p. 139). Unlike the other 'proximate' forces at work, the cause of variation is related to the ultimate cause and hence related to the 'Unknowable'. Accordingly, as a scientific mechanism, it was of lesser interest to Spencer. His emphasis was primarily on the Lamarckian mechanism (Peel 1971, p. 148). The Darwinian process of natural selection was applied mainly in the early stages of social evolution (Peel 1971, p. 149). His use of the organic analogy — where society is seen as a homeostatic organism — also may have contributed to this distribution of emphasis because the Lamarckian mechanism could be made compatible to a notion of cumulative change within in a single body.

The use of the organic analogy is extensive in Spencer's theory and forms the principal link from biological to social evolution and the source of his well known extreme laissez faire individualism. In the process of biological evolution, emotions and feelings develop within the organism as a necessary part of the process. Without them, there would be no means by which behaviors that are beneficial would come to be reinforced and those that are detrimental would come to be discouraged. In humans, there would be the development of feelings of sociality and sympathy as people came to realize the advantage of cooperation in the struggle to exist. This collective sympathy and sociality would develop and emerge in a new form, society. Societies would be like any other organism and subjected to the law of evolution. However, there would be important differences between biological and social entities. In organisms other than those of the simplest type, the brain is the center of consciousness. Consciousness resides in a specific organ and is found in no other organ of the body. In a society, consciousness resides in every one of its members but does not exist at the collective level. Furthermore, cells of organism are subservient to the organism as a whole while society exists for the benefit of its members. For Spencer,

these distinctions required that primacy be given to individuals over societies. The fact that society exists as another independent 'organism' subjected to evolutionary laws does not supersede the fact that it is composed from the actions of individuals. Thus, Spencer would oppose socialism in all forms and support laissez faire.

3.4 William Graham Sumner

William Graham Sumner is widely regarded as the first and model American social Darwinist (Hofstadter (1955), Russett (1976)) and much likened to Spencer. Nonetheless, there are significant differences on certain points between he and Spencer sufficient to set the two apart (Russett 1976, pp. 101–102). More strongly, it is claimed that there exists a fundamental distinction in his evolutionary social process sufficient to sever this parallel to Spencer and to render popular depictions of his social Darwinism, based solely on his earlier publications, mere caricature (Bannister 1979, p. 99).

The nature of Sumner's fundamental distinction stems from the dichotomy between the natural and the social. In his *What Social Classes Owe to Each Other*, a series of essays, he postulates two types of competitive processes; one that relates to the struggle between man and nature, referred to as the struggle for existence, and the other, a set of social forces referred to as the competition for life (Bannister 1979, p. 104). The former is Darwinian in the sense that its basic mode of operation follows from Malthus' principle of population — that is, the shortfall of food supply relative to the population — but with the qualification that this also relative to the given stage of arts (technology) and standard of living. It is also Darwinian in the sense that its scope of application is mainly biological. The nature of the process of the competition for life and its relationship to the struggle for existence was never well defined, but Sumner nevertheless emphasized its importance. "The distinction here made between the ills which belong to the struggle for existence and those which are due to faults of human institutions is of prime importance" (Sumner 1883, p. 18, see

also pp. 63, 76).

Sumner is likened to Spencer particularly in regards to the defense of laissez faire individualism. In other areas, both held that the operation of natural processes could not give rise to ethical or moral judgments and that the operation of social forces could affect those in the natural realm (Bannister 1979, p. 104). But Sumner's distinction between the struggle for existence and the competition of life also marks their differences. Spencer's evolutionary law was singular and universal. Society and biology occupy different locations on the same spectrum, and the whole of this spectrum is subject to one law, whereas Sumner apparently had two laws or mechanisms and did not find it necessary to fully integrate the biological with the social. Also while both men held notions of progressive evolution, Spencer's process was mechanical, Sumner's evolution was economic and far less optimistic.[16] Furthermore, Spencer's theory was founded on metaphysics but Sumner had "no use whatever for the language of 'natural rights' and for Spencerian metaphysics generally" (Russett 1976, p. 101). The confusion between the two and the charges of social Darwinism made against Sumner are the result of the early reactionary reception to Sumner's suggestions that the struggle for existence could be applied to man. Sumner, being interested in Malthus, had "merely wished to assert that Darwin gave support to the idea of a struggle for existence as a starting point for all speculation concerning beings" (Bannister 1979, p. 105).

In his later work, *Folkways and Mores*,[17] Sumner attempts to clarify the relationship of natural processes to the social forces in the competition for life. Cooperation, referred to as antagonistic cooperation, would now receive more extensive treatment as a facet of social life and would arise from the struggle for existence. He also coined the term 'in-group' to identify such co-operative groups and the term 'mores' to refer to custom or a "philosophy of right living and a life policy for welfare" (Bannister

[16] Answering the question, "How has change [from pre-historic to modern man] been brought about?" Sumner replies: "By capital" (Sumner 1883, p. 60, my comments).

[17] *Folkways* represents the first part of Sumner's planned *Science of Society*, an evaluation of sociology.

1979, p. 109). Relativism also figures prominently in this later account. Rules would be made relative to the state of resources, population, and technology. These changes in Sumner's outlook have led many to suggest that Sumner had abandoned his earlier economics in favor of sociology but must be noted that these same ideas were largely present from the onset. For example, social effort is clearly emphasized in the following passage:

> Now, by the great social organization the whole civilized body (and soon we shall say the whole human race) keeps up a combined assault on Nature for the means of subsistence. Civilized society may be said to be maintained in an unnatural position, at an elevation above the earth, or above the natural state of human society. It can be maintained there only by an efficient organization of the social effort and by capital. At its elevation it supports far greater numbers than it could support on any lower stage. Members of the society who come into it as it is to-day can live only by entering into the organization (Sumner 1883, p. 67).

These and other recurring themes in Sumner's work point towards a more coherent and complex intellectual legacy than the common portrayal as either simple social Darwinism or as devout Spencerian.

3.5 Summary

The purpose of this chapter is to provide a brief review of certain nineteenth century social Darwinists as potential sources of alternative and complementary evolutionary ideas and concepts. This review is restricted to Herbert Spencer and William Graham Sumner on the basis of Spencer's broad influence and the generally accepted need to distinguish social Darwinism from social Spencerism. Sumner is examined and detailed less because traditionally he is treated as the 'dean' of American social Darwinism than because of his intellectual relationship to Thorstein Veblen. Their influence on Veblen is not trivial. Regarding the debate on the nature of social Darwinism in American thought, although the lines of development are diverse, the recent research indicates that the importation of biological ideas into the social life must consider the broader and larger philosophical questions that surround the concept of humanity.

Russett, in general, argues that biological concepts gained acceptance only through separate diffusions into independently developing intellectual arenas such as those regarding the theological question of design in nature and the metaphysical question of chance and novelty. For brevity, only her examination of Darwinism and the question of political individualism in America is summarized above. Bannister's examination attempts to clarify and restrict the notion of social Darwinism to identify its impact in social thought. Although much of the breadth of what is traditionally associated with social Darwinism is excluded, Bannister's examination still centers on the question of the human nature and essence of humanity along with that of man's relation to the rest of creation. Degler's research, although directed towards differing ends, similarly finds that the central question in the application of biological concepts and explanations to the social sphere in the twentieth century is one of humanity. There appears to be no simple grafting of biological concepts onto social life.

Chapter 4

An Alternative History of Evolutionary Biology

4.1 Introduction

As noted in the introductory chapter to the thesis, the orthodox or inductive approach to the history of Darwinian evolutionary theory cannot adequately explain certain 'facts' of its history. One unexplained fact is the widespread doubt and rejection of Darwinism by biologists at the turn of the century; another is the two decade delay in the emergence of the synthesis between Mendelism and Darwinian natural selection. However, the recognition that Darwin's work was shaped by and introduced into an interpretive framework, referred to as developmentalism, resolves in large measure both these anomalies. The progressionist teleology, the growth analogy, and the morphological methodology of developmentalism would eventually resist and subvert the materialism of Darwin's natural selection by giving emphasis to the pattern of evolution over the process. The rise of Mendelism, with its concept of hard heredity and experimental method, constitutes the re-emergence of a separate and alternative stream of thought and interpretive framework to the prevailing developmentalism. Aided by findings in cell theory and its experimental methodology, Mendelism would succeed in displacing developmentalism where Darwin failed. Since Darwin's method was largely morphological, early Mendelists generally would be hostile toward it.

In this chapter, the nature and the history of developmentalism in nineteenth century biology is examined. Following this, the history of hereditarian thought is presented. Much of this is already implicit in the examination of developmentalist evolutionary theory but there are unique elements that should be considered separately to emphasize the fact that hereditarian thought can and should be viewed as

a separate body of work. Although this examination makes use of the construct of interpretive framework, it should not be regarded as one conducted solely in these terms and should not override attention to scientific and factual detail. Instead a pragmatic balance between the two approaches is sought.

4.2 Developmentalism in the Nineteenth Century

4.2.1 Early Developmentalism

Developmentalism was prevalent throughout most of the nineteenth century, indicating the extent of its influence and the productiveness of its concepts and tools. It may be roughly characterized as combining (a) the growth analogy, a methodological heuristic to define and explain natural phenomena in terms of the stages of organic development — eg. conception, birth, development to mature form, etc. — and (b) a progressionist teleology, a cosmological assumption which regards the world as a product of design or order with man standing at the front of this order. Its tools consisted of the morphological methodology and the argument from design. An early example of the influence of developmentalism on evolutionary theory is the case of the 'Law of Parallelism' interpretation of the fossil record. The assumed general sequence of advance from invertebrates to fish, to reptile, mammal and human being, is modeled after the stages of development of the human embryo to the adult form.[1] The relationship of the adult form to human beings is not accidental and reflects the progressionist element. The linear trend in the sequence of development in this case is typical.

In the early nineteenth century, the influence of the progressionist teleology was expressed in the attempt by naturalists, such as Cuvier and Paley, to find a pattern to classify the diversity of living creatures. Their interest in taxonomy was founded on the view that there existed a rational design in nature, and supported by appeals to the argument from design — ie. they argued that the order and complexity observed

[1] A later form of this sequence is expressed in the recapitulation theory (Bowler 1984, p. 119).

in nature could not have arisen out of material physical forces and thus must have been the result of some intelligent Designer. Extensions of this argument included the attribution of function or purpose to all living creatures on the presumption that any design is never without purpose, although it may be unknown, and the attribution of benevolence to the intelligent Designer. The argument for the latter extension follows from the first. Since each living creature has a function, the order and complexity of design observed in the structure of the creature's body was taken to have been designed explicitly for the fulfillment of that purpose, thereby demonstrating the benevolence of the designer through functional efficiency.[2]

The arguments used to extend design-in-the-world to purposeful design were also used to preserve the notion of the fixity of species or the stability of form. Late eighteenth and early nineteenth century taxonomy was based on a scale of complexity and was a single linear ordering of living creatures, known as the 'great chain of being'.[3] The increasing diversity of living forms that were discovered during the close of the eighteenth century had made the further use of this pattern or basis of classification difficult and untenable. Thus naturalists, such as Geoffrey Saint Hilare and Owen, began to search for a more complex pattern to organize the system of relations but did not reject the teleological basis of their programme (Bowler 1984, pp. 111-112). They began to shift the focus of design from the form of the species to the relations across species (Fothergill 1952, pp. 91–93). They shifted from the case of specific design to that of general design.

The progressionist element in developmentalism was also a product of other late eighteenth century events and activities. Increased exploration led to growing contact between the Europeans and 'primitive' cultures; advances in comparative anatomical research had brought the question of European man's relationship to other races and

[2] "Pluche declared that ocean tides were designed to help ships in and out of ports" (Bowler 1984, p. 49). The essence of the argument is that whatever is designed is *well* designed or is the *best* design.

[3] By modern standards this scale or ordering is not an evolutionary pattern, given the notion of the fixity of species inherent in the argument from design and given the absence of transmutation.

to animals to the foreground. It was always assumed that man differed from the animals because he was in possession of a soul but the physical resemblances with the apes from anatomical comparisons did much to close the gap. There was sharp debate over whether there were crucial physical differences between European man and their 'close relatives'. One difference between man and apes was the distinctiveness of man's foot and upright walking. Another distinction was the facial angle; European man's facial plane is typically perpendicular to the ground whereas apes have a back slanting plane due to the protruding jaw structure. Black African peoples, having an intermediate angle, are seen as an intermediate form.[4] Both of these were taken as evidence for placing European man at the highest stage of any evolutionary structure or as a reason for his separation from the rest of the animals. Aside from scientific activities, socio-political events also focused attention on the question of progress. The French revolution had brought the question of the design of society and the study of human nature. With the breakdown of French society, the question was asked as to what socio-political form is to replace that which was overthrown. To convince people that an ordered society was preferred over political anarchy, laws regarding human nature were proposed to show how a particular form of society might better accommodate man's basic nature. Early English utilitarianism and laissez faire economics had brought the belief of natural progress by socially unencumbered individual initiative. Later, Malthus would challenge such an optimistic view of man and society by asserting the 'naturalness' of poverty.

4.2.2 Developmentalism and Darwin

Against the backdrop of developmentalism, the more radical modern elements of Darwin's theory can be readily identified. The adaptive evolution that results from processes in the material environment operating alone precludes an immediate role for teleology and an intelligent designer. The role of teleology, either in the direct creation

[4]Bowler (1984, p. 88). The main proponent of this view was Petrus Camper, but he suggested caution in the interpretation of the results.

of species, in the design of the form of the species, in the design of the 'evolutionary pattern', or in the internal driving force of species (orthogenesis), was now assigned to the natural environment, giving it its materialist character. Furthermore, because it was a material process determining the path of evolution, there would be no ultimate plan. Darwin's evolution was open-ended.

Nevertheless, the 'radical' elements of Darwin's theory are not identical with and are narrower in scope than those Darwin treated as constituting the core of his theory. Contemporary historical research has shown that Darwin continued his early and serious interest in reproduction (or generation)[5] (Hodge 1985). Darwin's pangenesis is a theory of reproduction in organisms whereby the organs of organisms 'bud-off' parts which circulate throughout the body and collect in the reproductive organs. The nature of the 'buds' produced for each organ depended on the state of the organ. This is noteworthy because of the significant effect that the growth and state of the organism has on the determination of the manufactured parts. If Darwin's interest in pangenesis or reproduction was serious, then Darwin's theory of evolution cannot be a function of adaptation to the environment only, but also of the growth and reproduction process of the organism. Given the nature of this reproductive process, variation would be considered an addition or the 'next stage' in the growth process where that 'variation' is also transmitted by budding. Clearly this process relies heavily on the Lamarckian use-inheritance. If Darwin's treatment of this process dates back to an earlier interest, his use of the Lamarckian process cannot be treated as a mere response to a critique of his theory.

By including a process of growth and generation in Darwin's theory, an explanation of how developmentalism managed to neutralize and mask the materialism implicit in Darwin's theory can be derived in terms of the basic explanatory variables. Like either the modern or the materialist formulation of Darwin's theory of evolution, the developmentalist version can take the environment as its final explana-

[5]The orthodox history treats Darwin's interest in this matter as incidental and his theory of pangenesis as an addition to his work far after the development of natural selection.

tory factor even if additional growth processes are present because the growth of an organism is affected by the uses derived from the environment. That is, a Lamarckian type process may be present within Darwin's theory from the onset to explain evolution (in the developmentalist sense or otherwise) but both natural selection and use-inheritance can be seen ultimately as functions of the environment. This is the reductive case. However, it is possible to represent Darwin's theory as a function of two explanatory factors, environment and growth. This is the non-reductive case. In this formulation, the environmental factor is associated with the adaptive pressures of natural selection and the growth factor with Lamarckian use-inheritance type process. If there is a predisposition towards reductionism, the non-reductive Darwinian model of explanation can be collapsed to the initial model with the single explanatory factor. On the other hand, if the growth process is asserted to play a fundamental role — if it is argued that development through a set of growth stages represents a level of complexity and order sufficient to distinguish the growth factor uniquely from the environment factor[6] — then the non-reductive model can be taken as the case however much the environment may play a role in the explaining the direction of growth. The developmentalist, who would find only the non-reductive form comprehensible, would emphasize the role of growth in evolution. Anti-Darwinists could, and they did as Bowler contends, incrementally ignore the environmental factor of the non-reductive form such that by the end of the century the notion of adaptive evolution arising out of material processes could be dismissed completely (Bowler 1988, p. 74).

In addition to the developmentalist predisposition or assertion of the importance and primacy of the growth analogy, other factors served to mitigate the impact of Darwin's materialism. According to Kohn (1985), Darwin had continually changed his ideas during his lifetime, suggesting that he was not prepared to take a strong stand in regards to his materialism (Kohn 1985, p. 245). In 1844, Darwin's natural selection was still episodic: he intended that natural selection be a teleological prin-

[6]That, say, the epi-genetic, unfolding sequence of development is too complex for a mechanical explanation.

ciple of God and geographical isolation to be the only factor that would separate a population. After studying the variation of barnacles and learning of Richard Owen's work, he modified the process of evolution to include a process of specialization. Darwin completely rethought his work and formulated his principle of divergence so that an evolutionary advantage could be gained by the avoidance of competition through specialization. Thus evolution continued to occur even in stable environments. This would serve to mitigate the role of the environment as an explanatory factor. By the time Alfred Wallace's work appeared, Darwin's theory had become more dynamic. Natural selection became less episodic and more continuous and gradual. It became a force acting continually on species whose characters were never fixed and never sharply defined. Darwin still treated variation not as the circulation of genetic characters within a population but as a departure from the norm produced by disturbances in the individual growth process.

The sharp image of Darwin as pure scientist in the inductive sense has been assailed from other directions. There has been an analysis of the progressionist teleology in Darwin by R. M. Young (1971). His view is that Darwin was principally progressionist in the early years. The metaphor of natural selection is seen to convey the sense of a 'superintendent power' equivalent to that of the natural breeder. But this was all prior to the inclusion of the principle of divergence — ie. of the ongoing adaptation in a stable external environment. After this inclusion, Darwin could no longer accept that adaptation was perfect and saw the cruelty in nature because the continuing struggle appeared to be for no purpose and unendingly so. Ospovat (1981) puts forth the view that in order for Darwin to maintain his faith, Darwin refocused on progress and downplayed the neutral outcomes. He began to see how branching evolution, despite that fact that progress was not guaranteed, could give rise to higher levels of organization.

Although Darwin's thoughts on evolution did change, his work still can be distinguished from that of others such as Wallace, Chambers, and Spencer. Wallace,

for example, "had no interest in artificial selection, but Darwin consistently used animal breeding to illustrate his theory" (Bowler 1988, p. 27). Also, Wallace's notion of selection differs from Darwin's in two important respects. First, selection occurs through individual-to-individual competition and by elimination in Darwin; the environment only passively determines evolution through its conditions. In Wallace, the environment is active and provides the stimulus for selection. There is more strongly the trace of some agent or agency. Secondly, Wallace was concerned with the selection of varieties in the sense of groups or subspecies whereas Darwin's unit of selection was individual organisms. Chamber's evolution consisted of a series of saltative transmutations moving up through a progressionist hierarchy of forms[7] whereas Darwin's changes are gradual and undirected. His process of evolution, referred to as the 'universal gestation of nature', was driven mainly by the addition of new stages of embryonic growth initiated by changes in the environment. However, the environment did not determine the direction of change and acted only to trigger change. As for Spencer's theory of biological evolution, the key aspect is his significant reliance on Lamarckism. Spencer's insight lay in the discovery that Lamarckism could be the mechanism of both adaptive and progressive evolution since a higher level of intelligence is in the long run the best way of coping with changes in the environment.

4.2.3 Developmentalism after 1859

The period after the release of the *Origins* until the turn of the century was one of initial superficial support for Darwinian theory which later turned into open rejection. The early acceptance of Darwin's branching and divergent evolutionary pattern by others such as Huxley and Haeckel — whom Bowler refers to as the pseudo-Darwinists — never extended to Darwin's mechanism of evolution (Bowler 1988, pp. 76–81). The anti-Darwinists who appeared later in this period, when Darwin's theory was more fully examined, rejected Darwinism completely. Even in those cases where natural

[7]Which placed Man at the top, not surprisingly.

selection was of primary interest, the requirements of the developmentalist interpretive framework would restrict its application towards developmentalist concerns thus the character of this line of exploration would not be easily differentiated from those of the pseudo-Darwinists.

After Darwin, the developmentalist preoccupation with abstract, ideal patterns found expression as evolutionary morphology. The objective of these studies was the construction of evolutionary genealogies — a complete history of life on earth over the full horizon of geological time. The fossil record had already become the subject of intense public interest and it is not surprising that paleontology should become linked to evolution and biology. Darwin however, did not use these morphological techniques himself. In the *Origins*, very little use was made of abstract diagrams and only fragmentary genealogies appear in his private papers. Given that his response to critics regarding the discontinuous nature of the fossil record was that the fossil records are imperfect, it would seem unlikely that he would approve of such a programme. However, as might be expected, many pseudo-Darwinists espoused a divergent pattern in the fossil records while the anti-Darwinists stressed the existence of non-adaptive, linear trends (Bowler 1988, p. 92).

Two of the more prominent pseudo-Darwinists are Thomas H. Huxley and Ernst Haeckel. Huxley is famous for being a champion of Darwin and was referred to as Darwin's bulldog because of the manner of his support. Yet, Huxley did not accept natural selection. He argued against the effectiveness of the mechanism and considered that it could not be proved until artificial selection can be shown to have produced a new species. In practice, no real use of natural selection has been found in his work in the early 1860s (Bowler 1988, p. 77). It was not until 1868 that he admitted that birds had evolved from reptiles but even then he still did not favor the natural selection metaphor. Throughout his life, there is further evidence that Darwinism had little influence. The linear sequence he and Othniel C. Marsh used to describe the evolution of the horse is clearly not adaptive. His 1871 paper suggested that

evolution might be directed by a law of variation, though this was never formulated. And by 1878 he openly proposed that evolution is directed along definite lines.

In Germany, the reception was somewhat different. German thought had been conditioned to the notion of evolutionism or progressionism as an unfolding purposeful trend in history. It did share a common interest with the British in evolutionary morphology. The acceptance of Darwin in Germany, particularly the more materialist interpretation, rested primarily on the fact that contemporary German thought had recently purged itself of the speculative and mystical *Naturalphilosophie*. Darwin's reliance on the material environment to determine the 'fitness' of species variants allowed Haeckel to argue that the relations between species were the result of natural processes and not due to the mystical archetypal form. However, in his work there was little to show a significant interest in Darwinian evolution or that his conception of adaptation was in any manner selectionist. He seems to have preferred a form of direct adaptation which is, essentially, simple Lamarckism. His over-all research program was directed towards the reconstruction of grand genealogies and he came to be the chief exponent of the biogenetic law or the recapitulation theory — that ontogeny in the individual recapitulates in the phylogeny of its group. Gould (1977) has shown that recapitulation is essentially a Lamarckian idea.[8] Lamarckism can justify a belief in recapitulation because it assumes variation to be an addition to the growth process.

The anti-Darwinists were a larger, broader group and included many outside of biology including Lord Kelvin and Fleeming Jenkin. Those of a biological background differed on the grounds of the gradual adaptive pattern of evolution. For instance, St. George J. Mivart originally advanced many of the well-known arguments against Darwinian theory and was highly influential.[9] Mivart's attack was based on the

[8]Suppose that the process were not Lamarckian. If evolution works by summing up random variations, there is no reason why a modern individual should grow through stages resembling the adult forms of its ancestors. Constant and effective environmental pressure suffices. See Chapter 11 in Gould (1977).

[9]Some of these have been discussed previously, in Chapter 2, such as the functionality of complex organs in intermediate stages argument, or the absence of intermediate forms argument. See

existence of complex structures such as the compound eye or the wing when used for flying. Intermediate forms of these structures would not have adaptive value because they could not be functional. As a consequence, evolution must be saltative. Mivart was likewise concerned with explaining the fossil record and held that natural selection was not up to the task since its variations were considered too weak. Imperfections in the fossil record led Mivart to formulate an explanation by parallel evolution.[10] In this theory, similarity is not explained by common ancestry but by similar internal forces causing the independent forms to move in the same direction. Later, Mivart accepted that the internal force operated under the control of the process of individual growth thus completing the return to the growth analogy within the century of the introduction of the *Origins*.

In America, neither natural selection nor Darwin's divergent adaptive evolution was ever broadly received. Mainstream research focused on directed evolution and was founded on the view that nature was designed around an underlying pattern. The strong anti-Darwinist elements are particularly notable in Edward Cope and Alpheus Hyatt (Bowler 1988, p. 99). The growth analogy and the recapitulation hypothesis are key elements in their theory. Evolution proceeded stepwise and the pattern of development is regular and pre-determined. Parallel lines of development are noted along with differing rates of evolution. Seen as departures in the growth process, individual variations are the source of additional stages. Initially their theory offered no natural explanation of how the development process would be guided, but later they began to argue that the inheritance of acquired characteristics would provide such a mechanism.

Many anti-Darwinists were either avid Lamarckians or would later adopt the use-inheritance mechanism, but there was a significant group of others whose dissent was of a separate nature. Although they shared the view that evolution and change was

Fothergill (1952, p. 124) for a brief but complete listing.

[10]Which is "the most important practical manifestation of the belief that evolution unfolds in a pre-determined direction" (Bowler 1988, p. 96).

saltative, this group is marked by a disapproval and disenchantment with the morphological methodology. This group, the Mendelists, signalled the re-emergence of hereditarian thought. Gaining prominence near the turn of the century, Mendelism as a distinct stream of thought and interpretive framework would soon displace developmentalism.

4.3 Hereditarian Biological Thought

The suggestion that Mendelism represents the re-emergence of hereditarian thought should not imply that interest in heredity was absent for some period prior to it. At a practical level, issues of heredity and breeding remained the center of attention. Parents were concerned with the transmission of traits to their children; farmers where concerned with the hardiness and yield improvements of their livestock; animal breeders traced valuable blood-lines in horses and other domestic animals. However, the results from breeding activity are complex and often hard to generalize into a body of knowledge and thus it was unlikely to be treated as formal theory. Still, certain regularities had been established. One was the effect of hybridization on vigor. The first generation from a cross-breed tended to be larger, stronger, more hardy stock. Another 'fact' was the effect of inbreeding, which tended to isolate and concentrate certain traits or qualities. Highlighted against the effects of inbreeding and the intensification of characters was the third phenomena, that of reversion to type.

Earlier, more general and less practical views of heredity arose from peripheral areas of knowledge. In the first half of the eighteenth century, Descartes' mechanical rationalism had become popular. One consequence of Descartes' mind-body distinction was to divide man from animals on the basis that only man possessed mind. Conversely, the explanation of physiological processes, such as reproduction, had to be reduced to mechanical terms. Descartes' mechanical program was highly successful regarding physical phenomena but it could not adequately cope with the complexi-

ties of organic generation and heredity. Thus vitalism, a view current with Descartes, which asserted that there exists a vital life-force outside the realm of material (physical or chemical) forces, remained dominant in biological sciences (Mayr 1982, p. 52). The vitalists claimed that the reproduction or generation process is epi-genetic — ie. a series of orderly, unfolding events. At each stage, developmental change occurred only in some but not all of the parts, unlike simple mechanical expansion, the Cartesian explanation, where change occurs over the whole body simultaneously. However, by the turn of the eighteenth century, refinements in microscope technology renewed the mechanical challenge to the epi-genetic view. Since the microscope allowed the exploration of phenomena beyond the observational capabilities of the naked eye, it could accommodate hypotheses based on 'unobservables'.[11] One line of mechanical explanation postulated the existence of unobservable underlying miniature parts within the organism and came to be known as preformation theories. Each part would represent an organ of the body. This approach would carry significant implications on the nature and role of heredity. In its most radical form — the theory of pre-existing germs — the question of heredity was rendered superfluous since for every generation in the ancestral line the hereditary material had been pre-determined. There was no parental contribution of life-time specific changes and thus no impact from heredity. Parents only passively transmitted the material.

Less extreme preformationists did permit the transmission of minor life-time specific differences. Since nutritive material was also passed along and absorbed, it could be seen as affecting the growth of the embryo. The result of this heredity process is to produce progeny that showed intermediate or blended characters depending on the relative amounts of nutritive material absorbed.[12] However, while the process did involve the formation of parts, the nature of the transmitted character could not be regarded as particulate in the Mendelian unit character sense — ie. discrete. Further,

[11] Although this does not appear to be a highly defensible position, the general enthusiasm surrounding the improvements in the microscope may explain the absence of stronger criticism.

[12] While there existed discrete characters such as sexual organs, the majority of characters were not seen to be of this type.

because the parents were generating these parts within their bodies with their own organs as prototypes, changes to the parent's body would also be transmitted. The transmission of acquired characters provided a source of variation but since this was counter to the mainstream belief in the fixity of species it was necessary, for consistency sake, to ensure that the range of variation was limited. Thus, the process of heredity is featured as a duplicating process and variation was seen as a disturbance or interference in the duplicating process. More importantly, the process of variation (from growth) is separate and antagonistic toward that of heredity. In the modern theory of heredity, variation and inheritance are aspects of the same process.

4.3.1 Heredity and Evolution

The early part of the nineteenth century was characterized by a shift to evolution and transmutation — the idea that species form can be modified. The role of embryology and the growth analogy in shaping evolutionary thought has been discussed previously. In the context of heredity, the impact of the analogy was to redirect or suppress interest in the question of heredity or to render it secondary to the question of growth. For example, Darwin's theory of pangenesis, while incorporating blending heredity, was primarily as concerned with the question of growth.

Darwin's theory of pangenesis is also remarkable as a point of departure for the work of Francis Galton on ancestral heredity.[13] He objected to the active role assigned to the parent in the transmission of hereditary materials. Thinking that the material was transmitted unchanged and over many generations, Galton formulated his law of ancestral heredity where any one individual's heredity is determined not only by its parents but by all ancestors. However, the contribution of each set of ancestors diminished the further removed in time they stood to the individual organism in question.[14] In each generation, both parents contributed germinal material to the

[13]Although Galton's law is important to heredity, it bears repeating that it was intended to be a theory of evolution.

[14]The exact contribution the n^{th} generation is given by the formula $1/2^n$. The total contribution is given by the sum of these terms for all $n = 1, 2, 3 \cdots \infty$, which of course equals 1.

offspring so the characters are regarded as blended but the germinal material itself could not be. In Galton's work, there are also many of the elements characteristic of the Mendelian theory. One is the independence of the reproductive or growth process to that of heredity. Variation no longer could be viewed nor explained as a disturbance to the process of generation as it was in the preformationist theories. If variation in the individual offspring is to be explained, it must be based on the heredity process alone. In this case it would be through the recombination of different characters in the individual after 'conception', another similarity to the Mendelian case. Lastly, Galton's ancestral law maintained that variation and heredity were part of the same process and is one of the hallmarks of the modern view of heredity.

Galton carried out his work using mainly statistical techniques instead of descriptions of physiological processes. These techniques would later serve as the foundations for the biometrical school. This approach would prove significant not only because of the aforementioned separation of heredity from growth but also because it initiated and fostered a populational view of species and variation. The influence of the statistical notion of population densities and distributions is strong. The heredity particles were taken to be infinitely divisible so that variation was made continuous.[15] Galton's theory also placed limits on the range of variation. Variations further along at the tail end of the distribution carried an increasingly lower probability of occurrence. This relationship was known as the regression effect and acted to preserve a given set of characters within a population. Thus evolutionary phenomena in Galton's view must be saltative due to the stability in character from the regression effect. After Galton, the statistical approach was continued by Karl Pearson. Pearson maintained the populational view of species and variation but differed from Galton in his gradualist's view of evolution — ie. natural selection.[16] He argued and demonstrated that the law of ancestral heredity could result in a small, slow shift of the population mean.

[15]This is, of course, not very well founded physiologically but Galton's work was ruled mainly by statistical technique.

[16]This was an unusual position to take given the strong anti-Darwinist climate at the turn of the century.

Aside from Galton and the members of the biometrical school, there were other factions in biology that supported the notion of hard heredity. By the late 1890s, cytological research had reached the point where it could provide alternative arguments for hard heredity. For instance, August Weismann had introduced the notion of germ plasm, a characterization of the heredity material as independent from the host organism and as having a material basis. Along with his enthusiastic support of Darwin's natural selection as the only adaptive and operative evolutionary mechanism,[17] Weismann's theory must be seen as an early pre-cursor to the modern genetical theory of natural selection (Mayr 1985). However, Weismann's dogmatism did much to reduce the attractiveness of adopting his theory and it must be recognized that his work was broadly rejected (Bowler 1988, Mayr 1985). Further distinguishing himself from the modern era is his lifelong concern for developmentalist issues. Even in the last edition of his textbook he regarded these issues in detail.

An interesting extension of Weismann's work appeared in 1889 with De Vries' theory of intracellular pangenesis. His research set out to reconcile Darwinian theory to the contemporary cytological research. De Vries altered Darwin's theory of pangenesis by postulating the pangene, not as a particle circulating in the blood, but as a particle residing in the cell nucleus and one that could only be reproduced by cell division. This formulation is even closer to the modern case than Weismann's theory but De Vries's pangenes resided along with but were separate from the chromosomes, and the chromosomes were neither an active nor central part of De Vries' theory. Unlike Weismann, De Vries insisted that a full complement of pangenes existed in each cell. If the full complement of pangenes existed in each cell, then their number must be limited. If the number of pangenes was limited, then variation is likely to be discontinuous. Weismann held that variation and evolution must be continuous.

De Vries is most commonly cited for his rediscovery of Mendel's laws but before proceeding to it, a discussion of Mendel's work is necessary. Since one of the

[17] He conducted experiments to deny Lamarckian use-inheritance. One such experiment involved cutting the tails off of many successive generations of mice to show that 'tailessness' was not inherited.

main points of the alternative history presented here is the emphasis on the extent to which developmentalist thought ruled nineteenth century biology. Mendel's concern over transmission and heredity over those of growth must appear anomalous. Olby (1979) argues that Mendel is less a Mendelian in the orthodox sense. His experiments, Olby claims, are shown to be concerned with growth. His main interest in hybridized varieties was to demonstrate how these could give rise to new species. It has been shown that if the laws of inheritance were of primary importance, then the variety of peas Mendel used would not be ideal for his purposes since their characters show linkage and thus do not independently assort (Olby 1985). Further, there is no mention of paired particles in Mendel which reduces the presumed importance of the 3:1 ratio observed in segregation. Callender (1988) has argued that Mendel wanted to defend Linneaeus' hybridization theory of species creation. His experiment with peas represents a test of the transmission process and his later experiment with *Hierarcium* represents a test of the emergence of new characters. The direction of the recent research on Mendel has tended towards showing the significant influence of developmentalism.

Notwithstanding Mendel's own interests, by the turn of the century the focus lay in the phenomena of segregation and its discontinuity. Through segregation, characters are shown to disappear from observation but are not eliminated from the species population since they would reappear in a later generation. This phenomenon remained a hopeful case for saltative or discontinuous evolution by pointing towards the sudden appearance of characters. De Vries soon abandoned the law of segregation as insignificant for evolutionary theory and shifted his emphasis to mutation as the fundamental evolutionary mechanism. He argued that segregation was insignificant since it did not explain the origin of *new* characters. Like evolution based on segregation though, it would remain discontinuous under his mutation theory. William Bateson's was also concerned with an explanation of the formation of new characters. He became convinced that the character of this process would be discontinuous but

was suspicious of De Vries' mutations. Moreover, he was more openly hostile towards Darwinism. In 1894, he launched an attack on Darwinism on the grounds that variation was not continuous nor was the use-inheritance mechanism operative by arguing that new characters were produced by biological not mechanical processes and that they persisted regardless of their use to the organism. [18] This drew a response from the biometricians, most notably Pearson. The debate involved such issues as the discrete versus continuous nature of characters and variation, the location of the characters' particles, the ontological status of the character unit, etc. In the midst of this debate, the point missed by both was that evolution could be continuous while heredity occurred with a discontinuous or Mendelian process. Several Mendelian factors working on a given character can give rise to a continuous range of variation. This view did not emerge until the 1920s when genetics expanded its scope to include natural populations whose genetic makeup is complex.

The eventual reconciliation of discontinuous heredity and continuous evolution took place only after certain crucial concepts were introduced by the Danish botanist Wilhelm Johannsen. Johannsen introduced the distinction between the genotype and the phenotype[19] (Bowler 1989, p. 131). Although Johanssen's usage differs from the modern, the distinction between physical character and its genetic composition would still prove useful. Organisms of the same genotype could vary in phenotype, because of environmental pressures on the growth process. However phenotype variations were not inheritable — ie. there was no Lamarckian use-inheritance process. The sole factor in determining the next generation's character is the genotype of the parents. Johannsen was extensively influenced by Galton's work but disagreed with the view that a population showed a continuous range of variation with respect to a single heritable character. His experiments with beans showed the existence of several pure lines existing within a natural population, each of which showed no

[18]Initially Bateson began his career as an evolutionary morphologist but soon abandoned this as fruitless. Bateson also coined the term 'genetics' in 1905 (Coleman 1984).

[19]He also coined the term 'gene' (Bowler 1989, p. 123)

inheritable variability and thus was resistant to further selection. The phenotype of the beans would vary continuously but genotypic variation was discontinuous since the population consisted of pure lines only. In Johannsen's work, selection processes were operative but could only select between pure lines — that is genotypes — and had no effect on the physical characters. Thus evolution was still discontinuous.

Because the type of beans that Johannsen used were self-fertilizing, he had little specific concern for Mendelian segregation. The resulting pure lines were fixed and seemed to represent the older view of species fixity. Since Johannsen included some variation by way of mutations, this would mitigate this view. Johannsen's view of the gene was similar to Bateson's in that he did not conceive the gene to correspond to a material particle located on the chromosome. Thus, while certain elements of the modern theory are present, — such as the genotype-phenotype distinction and the identification of Mendelism with discontinuous evolution — the fact that transmission did not take place in terms of material particles suggests that Johannsen cannot be viewed as having constructed a complete version of modern genetics. The next stage of identifying the gene with the chromosome would occur in the United States with T. H. Morgan's work. However, Johannsen's work was highly influential and his visit in 1911 contributed significantly to the spread, establishment and strengthening of genetics as a science in America.

4.4 Summary

The main purpose of this chapter was to provide a detailed alternative account of the history evolutionary science with particular attention to Darwin's theory. It also attempts to account for the emergence of Mendelism as the result of a separate and distinct line of development. The details of both accounts will serve as a point of contact and reference in the forthcoming analysis of Veblen's theory. It must be stressed that although much of the recent scholarship on Darwinian theory is presented a as cohesive point set of ideas. for the present purposes no such objective

is undertaken. Instead, priority is given to those facts and events that will figure most prominently in the later analysis. The approach is pragmatic.

Within this alternative history of science, the role of developmentalism is large. Its basic elements, the progressionist teleology, the growth analogy, and the morphological methodology, would shape the priority and manner of interpreting theoretical issues. Stemming from the issue of design in nature, Darwin's theory of natural selection is shown as an extension of this line of thought and concerns, if not in whole, then in part; if not by Darwin's design, then by the interpretation of his present and future peers. Developmentalism would crucially predispose the central concern in evolutionary natural science towards the resulting pattern of evolution and away from the mechanism or process by which evolution gained its existence. Although Darwin's theory of natural selection can represent a challenge to the teleological foundations of the developmentalists' position, such a view of the response of the scientific community is historically inaccurate. His ongoing interest in pangenesis is but one example of how Darwin's focus may not have been entirely on the question of mechanical natural selection; the related question of the presence and necessity of a use-inheritance mechanism is another. In the nineteenth century, Darwin's theory of evolution would gain support but only in a form more consistent with the developmentalist interpretation. By the turn of the century, the hereditarian interpretation would challenge and succeed developmentalism for the role of interpretive framework in biological science. This rejection included Darwinian evolutionary theory. The new heredity theory of evolution, based on the experimental methods of embryology and the mathematics of probability statistics saw evolution principally as a saltative process of species transmutation. The synthesis of the Darwinian and the hereditarian schools of thought leading to the modern formulation, the genetical theory of natural selection would not occur too soon given the basic antagonism between them. It would require a careful and precise analysis of the levels of operation of each process to achieve this.

Chapter 5

The Structure of Veblen's Evolutionary Theory

> Questions of a primordial beginning and a definitive outcome have fallen into abeyance within the modern sciences, and such questions are in a fair way to lose all claim to consideration at the hands of the scientists. Modern science is ceasing to occupy itself with natural laws — the codified rules of the game of causation — and is concerning itself with what has taken place and what is taking place (Veblen 1908, pp. 37–38).

5.1 Introduction

In this chapter, Veblen's Darwinian or evolutionary characterization of theories is identified and detailed. First, Veblen's discussion of of the pre and post Darwinian distinction is examined and analyzed. It was suggested earlier in the thesis that Veblen's use of the term 'Darwinian' was essentially methodological, that the Darwinian distinction contained methodological standards that would properly apply to his own theory, and that this distinction served to demarcate certain scientific theories from others. The objective of the first section is to establish, in detail, what these standards are and what implications they might have for his own theory. Secondly, Veblen's social theory is identified, examined, and discussed in light of the details of Darwinian distinction. This entails identifying the basic elements of his theory, clarifying their fundamental qualities, and outlining the general relations between them. In addition to evidence taken directly from Veblen's work, the results from the preceding analysis are applied, where possible, to clarify certain aspects regarding these relationships. The analyses in this chapter are directed primarily at providing a structural characterization of Veblen's Darwinism and his theory. The issue of evolutionary content, identified principally with the work of Darwin, is discussed in the next chapter.

5.2 Veblen's Darwinism as Cumulative Causation

Veblen employed the term 'Darwinian' to characterize and to demarcate modern scientific theories from older taxonomical ones, as in 'post-Darwinian' and 'pre-Darwinian', respectively (Veblen 1908, p. 36).[1] He also applied the terms to characterize and demarcate periods in the history of science on similar grounds. Evidence presented and discussed in the opening chapter suggested that Veblen had no intention of limiting the meaning of 'Darwinism' precisely or solely to Darwin's work. Thus, the question arises as to the content of the term and, by association, the basis of Veblen's criterion of Darwinism in theory. It is argued in this chapter that Veblen's use was primarily methodological and that the distinction between pre and post Darwinism originates and develops from a differential emphasis on certain general aspects of the causal relation. The simplest argument for the methodological content of the term follows analytically. If a property or a set of properties is used to non-trivially partition or demarcate a collection of disparate theories into groups,[2] then the criterion cannot be any property or set of properties that is specific, and thus unique, to any one theory. This applies particularly to the specific formulation of the properties. If a specific property or set of properties is used then the resulting demarcation is trivial: one group will contain only that theory from which the demarcating properties are taken from and the rest of the theories in the collection will form the other grouping. For example,[3] if 'Darwinism' was implemented as a demarcating principle and it was defined or identified with, say, Darwin's process of natural selection then what results as a demarcation is one grouping containing only Darwin's theory and the other which contains all other theories. Darwin's natural selection is a set of properties or characters that is specific to Darwin's work and object of explanation. To apply Darwin's natural selection as a principle of demarcation, some generalization or re-

[1] Veblen has also referred to the same distinction as post-evolutionary and pre-evolutionary (Veblen 1898b, p. 64).

[2] Disparate in the sense that their subjects or objects of explanation differs.

[3] This is for illustrative purposes only. The argument in this section is analytical thus it does not make specific reference to Veblen's particular use.

formulation of the principle must take place. For instance, the scarcity of the food supply is what drives the struggle for existence in Darwin's natural selection process but this aspect of the process is difficult to apply to other subject areas where the concept of food supply makes little sense. It is possible to argue that the process of natural selection is 'common' to theories other than Darwin's only if the process of natural selection is construed figuratively or analogously but there are limits to what can be 'stretched' to fit the case.[4] The main point is that the property or set of properties that is made to serve as the demarcating principle must be of a more general or philosophical character than any property found at the theoretical level. It must transcend the theory-specific properties and formulation in order to be operative for this purpose otherwise the demarcation degenerates to one based on arbitrary subject matter differences.

The methodological character of Veblen's Darwinism and his Darwinian distinction can be demonstrated directly through the examination of his work. In characterizing and demarcating the recent past science and the modern sciences, Veblen implicitly defines a criterion of theory choice.[5] In the first case,

> To the pre-Darwinian taxonomists the center of interest and attention, to which all scientific inquiry must legitimately converge, was the body of natural laws governing phenomena under the rule of causation. These natural laws were of the nature of rules of the game of causation. They formulated the immutable relations in which things "naturally" stood to one another before causal disturbance took place between them, the orderly unfolding of the complement of causes involved in the transition over this interval of transient activity, and the settled relations that would supervene when the disturbance had passed and the transition from cause to effect had been consummated, — the emphasis falling on the consummation (Veblen 1908, p. 37).

Whereas,

[4]For example, this weakening of the requirements could not be made to include some of Veblen's example of post-Darwinian science such as chemistry. See Veblen (1899a, p. 84).

[5]The extent to which the methodological standards that Veblen defines are objective and absolute or subjective and relative is the subject of some debate. In general, the extent of the controversy depends on the extent to which scientific activity and theorizing are subject to habituation and institutionalization and on the epistemological capabilities of habits. The former condition is generally regarded as holding to a large degree and that, within the context of Veblen's theory, this leads to a problem of self-reference or of (infinite) regress. See Samuels (1990) for details.

> The characteristic feature by which post-Darwinian science is contrasted with what went before is a new distribution of emphasis, whereby the process of causation, the interval of instability and transition between initial cause and definitive effect, has come to the first place in the inquiry; instead of that consummation in which causal effect was once presumed to come to rest. ... But it has latterly gone so far that modern science is becoming substantially a theory of the process of consecutive change, which is taken as a sequence of cumulative change, realized to be self-continuing or self-propagating and to have no final term (Veblen 1908, pp. 37–38).

Clearly, Veblen's demarcation is based on a differential emphasis between certain generic aspects of causal processes. He makes reference only to the 'initial cause', the 'transient interval', and the 'definitive effect'. The nature of the difference between the two viewpoints is a differential emphasis on certain constituents of a generalized causal event or relation — between the definitive effect (ie. ends) and the intervening transient sequence of change (ie. means) that stand between the cause and the effect. Thus Veblen's concern with causality is of a general philosophical nature and is regarded as methodological in the context of theory choice and demarcation. However, this is not the whole of Veblen's distinction.

It would be somewhat superficial if the distinction rested only on the relative emphasis between certain constituents of the causal relation. Further, as it stands it is far too weak to discriminate between theories.[6] To appreciate Veblen's development of his distinction, it necessary to further investigate his various depictions of the distinction and their roots in the 'differential emphasis'. To begin, Veblen treats the difference between the types of causation as founded on "a difference in spiritual attitude or point of view", in "the basis of valuation of the facts", or in "the interest from which the facts are appreciated" (Veblen 1898b, p. 60). That is, the basis of the difference is a matter of subjective judgment in the form of specific preconceptions. The basis of the pre and post Darwinian distinction is not a matter of the presence or absence of an "insistence on facts", of a concern for "process, sequence, growth, and development", or of comprehensive schemes of 'cause and effect' relations in the

[6] What is a 'definitive effect' is not always clear from events of a 'transient' nature.

formulation of theories.[7] Moreover, while these differences in preconceptions manifest in a differential emphasis regarding the generalized causal process, the ultimate terms that underlie the difference between the views of causality, "in their last analyses, were different in kind" (Veblen 1898b, p. 60). A sharp distinction can be drawn. Elaborating on this difference in kind, Veblen describes post-Darwinian causality (cumulative causation[8]) as matter-of-fact, dynamic, impersonal; concerned with efficient causes, and inert, tangible facts, and with 'what has happened and what is happening'; reducible to a principle of conservation or preservation; and forming a sequence between the initial cause and definitive effect which is consecutive, unfolding, self-propagating, self-continuing, colorless, mechanical, opaque, and runs from the past to the present. Pre-Darwinian causality (natural laws) are described as teleological, spiritual, personal, animistic; of a nature of a propensity inevitably and unerringly moving towards a spiritually legitimate and predefined end, an imputation of sufficient reason, an idealized canon of conduct, not an empirical generalization, a meliorative trend which gives spiritual stability, normality and consistency to this end and which creates between the cause and effect a quasi-spiritual nexus suggestive of a coercive surveillance over the intervening efficient causes running from the apprehended future to the present. Scientific theories based on natural law are taxonomical and treated as absolute. Many of these elaborations may seem repetitive but they in fact pertain to different aspects of their respective general conceptions of causality. For example, the matter-of-fact nature of cumulative causation refers to the source and scope of the application of the causal relation and the mechanical nature of the sequence refers to the manner of its operation. Both are intended to suggest a certain materialism and thus are mutually reinforcing.[9] In light of these elaborations, it is reasonable to

[7] See Veblen (1898b, pp. 59–60).

[8] Veblen's use of the term can be found in such passages as: "... recourse has in our time been made available for the handling of schemes of development and theories of a comprehensive process by the notion of cumulative causation" (Veblen 1898b, pp. 60–61). See also Veblen (1908, p. 55) and Veblen (1906b, p. 418) for other examples. Hodgson (1992, p. 286) also uses the term.

[9] However, not all aspects within a given type of causality are related. For example, the requirement of a sequence which runs from the past to the present is independent of the requirement of the

conclude that the differences in the general causal relation that underlie Veblen's pre and post Darwinian distinction are sufficiently developed to serve as his methodological standard. Furthermore, given the interdependency and interrelationships within Veblen's various depictions of the distinction, deeper analysis must be undertaken.

Of immediate interest is Veblen's post-Darwinism or cumulative causation. One aspect of cumulative causation requiring analysis concerns its nature and status as scientific 'law' or empirical generalization.[10] Noted previously, natural laws are not depicted as having been derived from empirical generalizations.[11] Does this suggest that cumulative causation is an empirical generalization? At issue are the related questions of the nature and the source of the universality and invariance of the cause-effect relation — is it of the form of subjunctive[12] (or contrary-to-the-fact) conditional or it is of the form of a material conditional, that is, is the cause-effect relation intensional or extensional? The subjunctive conditional has the widest scope. It includes not only all actual cases of the conjunction of the cause (antecedent) and effect (consequent) but also future actual cases and logically possible cases.[13] The material conditional considers only actual and future actual cases. If cumulative causation is a subjunctive conditional, then it must contain an intensional or analytical[14] component in the relation since it transcends the experiential base. It cannot be purely 'empirical' in its source. Conversely, the material conditional cause-effect relation holds descriptively and predictively - ie. as a matter of fact — but may correlate

reduction to a law of conservation. In energy-preserving models, strict determinism usually holds so that all states of the system are known at one point in time, given some arbitrary initial state. In this case, there is no necessary direction in time; past, present and future are local prejudices. Consider a system modeled by differential equations.

[10]The framework under which Veblen's notion of causation is analyzed is based largely on Wartofsky (1968), particularly chapter eleven. Wartofsky's text is introductory and has been supplemented in certain instances with analysis from Fetzer (1990) particularly where causation relates to human behavior.

[11]"They (laws of nature) are not empirical generalizations on the course of phenomena, like the law of falling bodies or of the angle of reflection" (Veblen 1899a, p. 88, comments added).

[12]This is a 'technical' term suggested by Nelson Goodman. Also, see Walters (1972, p. 212) or Fetzer (1990, p. 24).

[13]Such as when the antecedent condition will never be actualized or when it has been negated but consideration is given notwithstanding this.

[14]As opposed to sythethic or empiric.

events which appear counter-intuitive and meaningless.

An initial assessment based of one Veblen's references on the scope of modern science implies that the causal relation in the form of either of the two conditionals appear to be too broad: "(m)odern science is ceasing to occupy itself with natural laws ... and is concerning itself with what has taken place and what is taken place" (Veblen 1908, p. 38). It appears that the scope of cumulative causation is restricted to actual cases and thus is a restricted form of the material conditional. However, this interpretation is somewhat simplistic and is by no means unquestionable and unequivocal. Veblen does retain the description of matter-of-fact or empirical knowledge as generalizations thus suggesting that the scope exceeds the experiential base.[15] Elsewhere, he criticizes the Historical school for producing a narrative survey of the facts and not a modern, systematic treatment.[16] Further, he recognizes that causation is a fact of imputation and that inductions must exceed their experiential base.[17] These latter views conflict with the earlier case but their conflict is only apparent. On this point Veblen can be interpreted consistently by sharpening the distinctions between the experiential base and synthetic judgment and between the context of discovery and the context of application. The restriction of modern science to "what has happened and what is happening" is a restriction to matters of fact in the context of discovery. Modern science is based on experience in the sense that experiences play the role of 'raw material' in the process of induction. However, the aggregation of factual experience is not the synthesis of facts — it is not the induction of a causal relation.[18] For Veblen this is a matter of subjective judgment and imputation. The restriction to matters of fact need not apply to the inducted causal principle or law itself although it is derived from facts. They are generalization because they exceed the scope of experiential base: inductions are used to 'forecast' future events [19] Thus

[15]See Veblen (1908, p. 41).

[16]See Veblen (1898b, p. 72).

[17]See Veblen (1908, p. 34, fn. 2) and Veblen (1884, p. 179).

[18]"... causation is a fact of imputation, not of observation, and so cannot be included among the data" (Veblen 1908, p. 34, fn. 2).

[19]"... by induction alone can we get such knowledge as will enable us to forecast the future"

Veblen's scope limitation does not restrict the universality of the causal relation in application, particularly in light of the use of inductions in forecasting. Also, the fact that the cause-effect relation is subjective[20] in nature further distinguishes its scope from the scope of the 'matter-of-fact' data set and rules out any construal of Veblen's cumulative causation in the form of some naively empirical, and thus objective, generalization.

Further consideration of the universality of Veblen's cumulative causation is required. First, it appears clear that cumulative causation is universal in its scope of application or reference but it is not clear whether it is mainly extensional or intensional in nature. His views on induction seem to imply that causality contains both elements. Because it is subjective, the elements of interpretation and meaning are included; because it concerns predictions, it pertains to future actual cases. This suggests that the issue of the intensionality vs. the extensionality of the causal relation may be less of a concern for Veblen than the feature of universality of the causal relation regardless of the distinction.[21] Secondly, the universality of cumulative causation should be seen as independent of its invariance. Because cumulative causation is universal it is also (mistakenly) held to be invariant and absolute; it can be used as the basis for the coherent, foundational structuring and systematizing of theory. Unfortunately, this is still a rather naive interpretation of Veblen's cumulative causation. It neglects his view of theory and knowledge as a fundamentally dynamic process.[22] As such, the set of past and present data on which an induction is based is continually accumulating, and so with it, a new induction of causal relations that potentially but not necessarily results in the revision of the prior relations.[23] Thus any specific cause-effect relation is never absolutely invariant.[24] Veblen's insistence on

(Veblen 1884, p. 193).

[20]See Veblen (1884, pp. 192–1933) for an explicit description of the subjectivity of induction.

[21]In some cases, it could be argued that Veblen tended toward the intensive formulation.

[22]See Veblen (1906a) and Veblen (1908) for details.

[23]One way to characterize this process is to compare it to a process of Bayesian updating of subjective probability distributions.

[24]"the objective point of the efforts of the scientists working under the guidance of this classical

the reduction of theory to terms of process stems precisely from the fact that causal relations of the cumulative causation type, in and of themselves, cannot adequately serve to structure and systematize theory.[25] The universality of cumulative causation is important to Veblen and may be of principal interest but only as it relates to its transcendence of the experiential base. However, the universality of the application of cumulative causation type causal relations should not be mistaken for an absolute and invariant basis on which theory can be structured.

The second aspect of Veblen's cumulative causation to be analyzed relates to the ontological properties of causation — the role that the 'cause' in causality plays as a condition of existence of the 'effect'. At issue is whether or not the cause (antecedent) or effect (consequent) stand exclusively as *conditions* for the other's existence or whether the cause-effect relations extends symmetrically to equate the cause and effect.[26] Abstracting momentarily from the temporal considerations within the cause-effect relation, the antecedent is viewed as a necessary condition for the existence of the consequent whenever the antecedent must be present for the consequent to exist and as a sufficient condition whenever the consequent must be present for the antecedent to exist. However, if in any given case the *relation* between cause

tradition (pre-Darwinian science), is to formulate knowledge in terms of absolute truth" (Veblen 1898b, p. 61, comments added).

[25] "In so far as the science is of a modern complexion, in so far as it is not of the nature of taxonomy simply, the inquiry converges on a matter of process; and it comes to rest, provisionally, when it has disposed of its facts in terms of process. But modern scientific inquiry in any case comes to rest only provisionally; because its prime postulate is that of consecutive change, and consecutive change can, of course, not come to rest except provisionally. By its own nature the inquiry cannot reach a final term in any direction" (Veblen 1908, pp. 32–33).

[26] Although this and the prior issue of causality may appear overly philosophical and somewhat peripheral, Veblen was clearly cognizant of them as basic general properties of efficient causes and causality more generally. For example, when describing the traces of natural law animism that had been carried over and projected in earlier forms of 'modern' science, Veblen notes that the image and relation of the workman to his product had been adapted to reinforce the "like causes produce like effects" (universality and invariance) and the "nothing is found in the effect that was not contained in the cause" (ontological equivalence) properties of efficient causes (Veblen 1906a, p. 14, comments added). However, this is not a statement of Veblen's views on cumulative causation since Veblen treats this early formulation as 'anthropomorphic'. More explicitly "These dicta are, of course, older than modern science, but it is *only* in the early days of modern science that they come to rule the field with an unquestioned sway and to push the higher grounds of dialectical validity to one side" (Veblen 1906a, p. 14, emphasis added).

and effect is symmetrical — ie. the converse of the relation preserves the converted antecedent's role as necessary or sufficient condition, then the relation between the cause and effect is one of equivalence.[27] As with the case of empirical generalization and universality, it is not immediately clear which case Veblen's cumulative causation falls into. If his requirement that a cumulative causation type causal relation must be reducible to a law of conservation (of energy)[28] then it would appear that the nature of relation between cause and effect is one of equivalence. Since the law of conservation states that energy is neither created nor destroyed but only transformed from one state to another, it is clear that the fundamental identity of all forms as energy is entailed in the notion of the ontological equivalence of all forms with respect to their fundamental nature. However, it may be argued that Veblen's requirement that cumulative causation consists of orderly, mechanical sequences that must run from the past to the present and that modern science be concerned only with 'what has happened and what is happening' may be seen as countering the possibility of reversing the causal relation and denying the equivalence interpretation of the relation. There is a conflation in this critique of the equivalence formulation of cumulative causation. It does not recognize the independence of the requirement of sequence to that of equivalence. Turning again to the physical laws of mechanics as an example of the independence of sequence and equivalence in causal relations, it is noted that the conservation law requires equivalence in energy but does not determine direction in time – ie. the fact that a gas in a fixed container increases in temperature when pressure is increased does not preclude the decrease in temperature of the gas when

[27]The nature of the equivalence is indicated by the manner in which the relation is reversed. For example, if the 'causal' relation was, say, the relationship of pressure to temperature of an ideal gas, where an increase in temperature leads to an increase in pressure, then the fact that this relation can be reversed is a matter of its physical properties, and the nature of the equivalence is physical and not merely logical.

[28]"The modern scientist is unwilling to depart from the test of causal relation or quantitative sequence. ... He wants to reduce his solution of all problems to terms of the conservation of energy or the persistence of quantity. This is his last recourse. And this last recourse has in our time been made available for the handling of schemes of development and theories of a comprehensive process by the notion of cumulative causation" (Veblen 1898b, pp. 60–61).

the pressure is decreased. The sequencing is incidental. Generally, if at all, a second physical law, the second law of thermodynamics, is incorporated to determine an essential direction in time. However, the direction in time is not determined by change in the overall quantity or level of energy but by an irreversible directional change in the quantity of total entropy (order, organization, complexity, heterogeneity, information, etc.) of the system. Energy and entropy are independent qualities of the system. Thus objections to Veblen's reduction of cumulative causation type causal relations to a law of conservation that are based on Veblen's requirement that causal sequences are ordered, mechanical sequences cannot be maintained given that ontological equivalence is independent of an essential temporal sequence.[29] Thus, from Veblen's requirement that causal explanations be reducible to conservation type laws it appears that a general feature of cumulative causation is ontological equivalence.

The last aspect of Veblen's cumulative causation to be examined pertains to the nature of causal sequence — its mechanical, self-propagating or self-continuing, and cumulative nature. Given Veblen's apparent reliance on physical, mechanical science and laws as ideals[30] the depiction of cumulative causation as a mechanical sequence must be regarded as significant. One implication of the mechanical nature of the sequence is the mode of operation. According to Veblen,

> latter-day physicists, for a hundred years or more, have been much occupied with explaining how phenomena which to all appearance involve action at a distance do not involve action at a distance at all. The greater theoretical achievements of physics during the past century lie within the sweep of this (metaphysical) principle that action at a distance does not take place, that apparent action at a distance must be explained by effective contact, through a continuum, or by material transference[31] (Veblen 1908, p. 35, fn. 2).

The transient sequence of events that stand between the initial cause and the final effect as a sequence of efficient causes must act through material contact or be prop-

[29]Furthermore, it is not entirely clear how Veblen would establish directionality in a 'mechanical' sequence or whether sequencing was intended to emphasize developmental sequences – ie. epi-genetic sequences.

[30]See Veblen (1908, p. 54).

[31]The two means by which action by contact occurs described here refer to a medium or field in which wave-like phenomena are propagated and to the transfer of quantized, particles of matter.

agated through some medium or both to bring about change. Aside from the issue of what this medium might be — if it should come into play at all — there is the question of the requirements following from the 'action by contact' mode of operation. If action is by contact, then action by contact must occur continuously throughout the causal interval. If it did not act continuously throughout then in the gap that exists between the last efficient cause and the next, there is an event which has no immediate cause. In terms of the conservation laws, energy has not been transformed but has been destroyed and then created. Such 'miraculous' creation can be ruled out if the action by contact operates continuously. Furthermore, since each efficient cause forms part of the causal sequence, the absence of any single cause will render the whole sequence, the transition from initial cause to the final effect, as ineffective. Thus the set of efficient causes must operate collectively or cumulatively to bring about the final effect or not at all. This permits us to characterize the set of efficient causes as necessary for the final effect. To establish that this set of efficient causes was intended by Veblen to be sufficient as well, the self-propagating and self-continuing nature of the sequence is examined. If the causal sequence is self-propagating and self-continuing then there is no need for any additional 'external' efficient causes or factors to generate the final effect. All elements and necessary dynamics that are required are contained within and sufficient for the final effect. Therefore, the resulting theories based on cumulative causation are theories of processes that are closed processes.

To summarize, the argument presented in this section is that Veblen's Darwinian distinction is methodological in character and that the basis of this distinction rests on and is developed from a differential emphasis on certain general aspects of the causal relation. This distinction is implemented by Veblen as a principle of demarcation and as an implicit criterion of theory choice. Post-Darwinian science is based on the 'modern' form of the causal relation that results from the emphasis on the 'transient' terms referred to as cumulative causation; pre-modern science is based on

the older form of the causal relation that results from the emphasis on the 'definitive' effect and is characterized by its use of natural laws. Cumulative causation, being of immediate interest, was further analyzed to reveal certain features. Firstly it was argued and demonstrated that specific causal relations of this type were not sufficiently 'absolute' and invariant to serve as the foundation for structuring and systematizing theory. Instead the systematic character of theories is to be derived from the 'structure of process'. However, this lack of invariance should not be confused with the lack of universality in the scope of the application of cumulative causation. Second, cumulative causation as depicted by Veblen was shown to contain a principle of ontological equivalence between the cause and effect in the causal relation. This conclusion stems from his insistence that modern science reduce its laws to ones of the form of conservation laws. The immediate consequence of such a standard would be the identification of some quality or entity within the theory that is analogous to energy. This is necessary in order to determine the fundamental nature of the elements within the process of transformation and whether the existence and transformation between the alternate forms has suitably occurred. Lastly, the material, cumulative and self-propagating nature of the transient sequence between the initial cause and final effect was analyzed to show the underlying mode of operation. Cumulatively efficient causal sequences operate through action by contact and as such the sequences acts continuously and collectively (cumulatively). Furthermore, the cumulative nature of the set of antecedent efficient causes is shown to be necessary and the self-propagating character of the set as a sequence implies its sufficiency. The primary result in this last case is to show the necessity of contact as a means of effecting change and that the complete characterization of Veblen's processes requires characterization in terms of a closed process.

5.3 Veblen's Social Theory

In this section, the elements of Veblen's social theory and the relationships between them are identified, examined, and detailed. The objective is twofold. First, given the methodological nature of Veblen's use of term 'Darwinian' and the set of methodological standards implicit in his pre and post Darwinian distinction, his theory needs to be assessed as to the extent it accords with these standards. Additionally, on the presumption that these standards rightly apply to his own work, they can be applied to clarify and extend the specifications of the elements and relations within his theory.[32] Second, the identification and detailing of the elements of Veblen's social theory and structure of relations between these elements serves to introduce and give background for the assessment undertaken in the next chapter of the biological Darwinian character of his theory.

Before any examination begins, it should be noted that the range of Veblen's work is broad. At various times, he treats such topics as institutions, instincts, the philosophy and history of science, eugenics, etc. and with an approach that has been described as economic, anthropological, socio-psychological, and so on. The difficulty that this presents in the analysis of his work is formidable. It is difficult to determine whether his work should be treated as a single body of thought and to what extent it should be treated as a tight and cohesive one. To the extent that some division is maintained between the various subject areas, how is it determined where the scope on one subject ends and another begins? If one particular subject area is chosen to definitively and ultimately establish the limits of Veblen's 'major' works, what are the consequences of this 'reduction' on the substantiveness of depiction of his work as a unified whole? Does the treatment of Veblen's work as a single body require or necessitate the use of only the most general of characteristics to describe his work and thus effectively limit the precision of the analysis? Are these boundaries and limits

[32]The use of Veblen's methodological standards in the reconstruction of his theoretical position is deductive.

consistently maintained throughout the course of his career? It is clear that prior to any attempt at analyzing Veblen's work a thorough consideration of these questions is necessary. For the present study, Veblen's work will be treated as a sufficiently unified body of thought. Further, it is held that the nature of his theories are best described in general terms. However, this is not intended to act as a limit on the extent of precision that can be achieved in the analysis, only the depth at which it may be taken. Certainly, the present study will not exhaust the available depth in Veblen's work. Moreover, the greater the extent to which the basic views held by Veblen were maintained consistently throughout his lifetime — a view generally endorsed in this analysis — the greater the extent of the depth of his analysis.

The preliminary examination of Veblen's work attempts to identify and detail the basis elements of Veblen's social theory. First, human individuals are examined; second, social entities. Following will be an analysis of the relations between these elements and the basic structure of the theory.

5.3.1 Instincts and the Contamination Process

Veblen's treatment of the human individual is reasonably explicit and well-defined. The core of his ideas are expressed in the *Instinct of Workmanship* with smaller but significant statements in "The Limitation of Marginal Utility" and "Why Economics is not an Evolutionary Science" and is referred to as his theory of instincts. Roughly speaking, the individual is represented as a set of differentiated behavior-setting factors — tropisms, instincts, and habits — for the purposes of his behavioral social theory. All three operate as teleological mechanisms in that all affect behavior by valuating and establishing the objective ends or goals of the behavior. The basis for their distinction from one another is not simple. Tropisms may be regarded as very closely related to physiological traits — that is, they are reasonably well-defined and delineated from one another and "transmissible by inheritance intact and unmodified" for his purposes (Veblen 1914, p. 9). Veblen claims that some but not all

instincts are similar to tropisms with respect to heredity[33] and with respect to the speed of response to stimuli. He suggests that gradations or classes exist within the set of instincts based on the immediacy or the 'automaticity' of responses.[34] In contradistinction to tropisms, all instincts "involve consciousness and an adaptation to an end aimed at" (Veblen 1914, p. 4). In the paradigm case, instincts are associated with a consciousness[35] response and a certain plasticity or flexibility in nature. Ultimately, consciousness or intelligence is reducible to the "selective effect of inhibitive complication" (Veblen 1906a, p. 6), a delay in the immediacy of response due to greater complexity of the human organism that, along with plasticity, allows for the possible and usual intervention of "an extended logic of ways and means ... between the instinctively given end and its realization" (Veblen 1914, p.6). In general, the "higher the degree of intelligence and the larger the body of knowledge current in any given community, the more extensive and elaborate will the logic of ways and means interposed between these impulses and their realisation, and the more multifarious and complicated will be the apparatus of expedients and resources employed to compass those ends that are instinctively worth while" (Veblen 1914, p. 6). This extended logic of ways and means is the third source of behavior setting in the individual. When institutionalized, when the extended logic through repetition becomes conventionalized, sanctioned, and incorporated into the scheme of common sense, it can interfere and supplant the instinctively given ends with institutional ones. This process is usually referred to as habituation. Due to the 'external' source of the habits, Veblen does not treat them as heritable (Veblen 1915, p. 7).

Further distinctions amongst instincts are drawn by Veblen. There are those instincts "whose functional content is serviceability for the ends of life, whatever these ends may be", and those whose function is to set these ends (Veblen 1914,

[33]See Veblen (1914, pp. 10, 13).

[34]See Veblen (1914, pp. 5, 10).

[35]Consciousness is variously described as 'reflection and deliberation' and 'intelligence' (Veblen 1914, pp. 5, 6). Interestingly, conscious thought is differentiated from human 'spirit'. However, it should be noted that consciousness and intelligence are not viewed as superseding the action of instincts.

p. 31). Usually only two 'native' types of the former class are identified — the instinct of workmanship and the parental bent. However, because the two are regarded as mutually reinforcing almost to the point of indistinction, Veblen treats them as if they were one. Also, given that they are "concerned with the ways and means of life rather that with any one given ulterior end", on this ground they seen to operate at the same level as 'habit-ruled' behavior (Veblen 1914, p. 31, also see p. 25). On the other hand, instincts that set ulterior ends are diverse. The set of these instincts differ across individuals, both in terms of the strength of any one instinct and the "scheme of co-ordination, coalescence or interference" amongst the set (Veblen 1914, p. 14). However, the general level of diversity across individuals is dependent on the ethnic or racial composition of the group. Veblen observes that peoples of lower cultures tend toward greater uniformity whereas civilized peoples are markedly diverse.[36] The underlying explanation or dependency is based on the mixture of 'stable' racial stocks where hybridization is seen as producing greater variety. Nonetheless even hybrid populations contain a "generically human type of spiritual endowment", a "general average human nature" (Veblen 1914, p. 15).

The diversity of ends-setting instincts requires the individual to undergo a process of resolving the several disparate goals into one since the individual can act only as whole and therefore can take only one goal at a time. Veblen's describes this process as one where the instincts "cross, blend, overlap, neutralize or reënforce one another;"[37] they must "incontinently touch, blend, overlap and interfere, and can not be conceived as acting each and several in sheer isolation and independence of one another"[38]. Serviceability or means-setting instincts are include in this process; "the less specific and vaguer instinctive predispositions, such as parental bent or the proclivity to construction or acquisition, will be so comprehensively and intricately bound in a web of correlation and inter-dependence" (Veblen 1914, p. 11). So much so is this process

[36]See Veblen (1914, pp. 14–15).
[37](Veblen 1914, p. 9)
[38](Veblen 1914, p. 11).

of resolving all instincts into a singular and cohesive form that when habituation occurs,[39] the "scope of habit, in so far as it bears on the instinctive activities, is necessarily wider than the particular concrete line of conduct to which habituation in question is due" (Veblen 1914, pp. 12–13). How this process of resolving the multiplicity of instincts works is not explained nor detailed by Veblen.[40] Appeal to some underlying Mendelian-like unit-character process would not be possible since this requires that the hereditary units remain discrete. Moreover, to claim that is it analogous to the complex relationship between several genetic factors that give rise to the continuous variation of certain measurable physiological traits would be an anachronism. Thus Veblen could not seek recourse to 'Mendelian' biology.

Other questions arise from Veblen's process of instinct contamination. Most relevant to the analysis in this chapter are the ramifications that the multiplicity, the absence of a clearly defined process, and the "degree of vagueness and generality, or absence of an automatically determinate response, a lack of concrete eventuality ... (in) common run of human instincts"[41] have on the nature of the causal relation established at the level of the individual.[42] According to Veblen, this indeterminateness is taken as essential or of the highest benefit to race survival[43], thus it must be treated as an 'intrinsic' component of the individual. On the other hand, the behaviorist (materialist) program of modeling human psychology in terms of stimulus-response type causal relations requires determinate, observable behavioral responses in order to claim that notions of mentalist phenomena are either not necessary or are non-existent. Additionally, mechanical process are generally regarded as highly, if not absolutely, determinate in principle. But the absence of regularity in the response to stimuli precludes any derivation of a universally applicable causal relation. Thus this represents a challenge to Veblen's methodological standard of cumulative causation.

[39]The impact of habits is kept distinct from the action of the instincts in the present discussion.
[40]This does not include the impact from process of habituation.
[41](Veblen 1914, p. 13).
[42]Note that the discussion is restricted to the internal or 'intrinsic' behavior setting factors – ie. tropisms and instincts. This is the case of the 'unsocialized' individual.
[43](Veblen 1914, p. 14).

Not only is it apparently not behavioral nor mechanical, it also precludes the formation of universal[44] causal relations on the grounds of the differences in the form of the conjunction of causes to effects. The actual cases on which the derivation of the relation arises are of the form of one-to-one relations[45] whereas the causal relation of future actual cases must be of the form of an one-to-many relation at best. That is, the form of the relation in regard to actual cases is incongruent with the form for the future actual cases. One solution to this problem may be adduced from the emphasis on 'type' and groups found in much of Veblen's work. Generally speaking, much of Veblen's analysis of societies and institutions is commonly made in terms of ethnicity and race.[46] What these examples point toward is the treatment of the individual in aggregate terms, in the manner of a representative agent, or in the manner of 'species'. If Veblen had conducted his analysis at the population level, then the actual cases on which the causal relation is based and applied can be formulated, respectively, as one-to-many type relations by summarizing the population proportion of response types for the actual cases and by specifying a probability distribution of possible response types for the future actual cases. This renders the form of the relation equivalent across actual and future actual cases.[47] Moreover it can be argued that strict determinism associated with efficient, mechanical causes is in no way lessened under this populational approach. For example, in some sense the statement "for any one throw of a fair die, there are six and only six equi-possible outcomes" is no less determinate than the statement that "the angle of incidence is equal to the angle of reflection". 'All' outcomes in each case are precisely treated. It is true that in the first case, a specific outcome can not be determined for a specific throw of the die, but whether

[44]In scope of application.

[45]That is, one stimulus to one response.

[46]For example, see (Veblen 1899b, p. 215), (Veblen 1914, p. 114), and (Veblen 1915, pp. 13–149) for consistent reference to the races of Europe.

[47]There are still deeper questions regarding the actual object of these types of causal relations such as those regarding distinctions between the whole and the particulars, and the interpretation to be given to repeated instances of the 'whole' stemming from the analysis of the causal relation in terms of an empirical generalization.

this one throw of the die and its outcome is of the greatest interest is relative to the purpose at hand. In some situations, the marginal result may be of little interest. If this is true, how is the statement that "for any one individual randomly selected from an ethnic group, there are x and only x possible responses" different from the first from first in terms of determinateness? To some extent then, it seems possible to use this populational or aggregative approach as a heuristic guide to the structure of Veblen's theory of instincts.

Some comment is necessary regarding the role of the contamination process in Veblen's *social* theory. This process cannot be taken to be the whole of Veblen's social theory, nor can it even be regarded as its primary process within the theory of the individual. "It is this endless complication and contamination of instinctive elements in human conduct, *taken in conjunction* with the pervading and cumulative effects of habit in this domain, that makes most of the difficulty and much of the interest attaching to this line of inquiry" (Veblen 1914, p. 29, emphasis added). In terms of his characterization of cumulative causation as a self-propagating and self-continuing sequence — that is, a closed process — and in light of the fact that the individual's behavior is jointly determined by the processes of habituation and of contamination, Veblen's process of social development could not be complete if the contamination process were treated as the whole of it. Without the inclusion of the effect of institutions on the individual and the possible contradistinction of goals, there would be no internal or intrinsic 'dynamics' to perpetuate the process of human social change or development. With that, attention is turned to the social elements in his work.

5.3.2 Institutions and Structures of Institutions

In the prior subsection, institutions were identified as a set of the extended logic of ways and means that had, through repetition, become conventionalized and sanctioned. However, Veblen's discussion of social entities was not limited to this aspect

of institutions nor were institutions the only social entity dealt with in his work. It is true that emphasis may be given to institutions due to their role in the 'complete' and 'closed' process of social development but the structure and multiplicity of institutions and the alternate social forms must be taken into account to clarify the specific issues on which Veblen's interest had mainly lain.

To begin, there is Veblen's depiction of society and social structure. Drawing on the distinction between the species population and the specific members of the species in the process of natural selection — that is, between the unit of evolution and the unit of selection — Veblen identifies the relationship between institutions and human society:

> The life of man in society, just like the life of other species, is a struggle for existence, and therefore it is a process of selective adaptation. The evolution of social structure has been a process of natural selection of institutions (Veblen 1899b, p. 188).

Society, in an aggregated, populational sense, it to be regarded chiefly in terms of structure in so far as society is related to institutions in an evolutionary process.[48] Furthermore, if the parallel to the process of natural selection is to hold in the most trivial of senses, there must be a multiplicity of institutions on which some selective mechanism is supposed to operate, but more importantly for present purposes, from which the relations between individual institutions are aggregated into social structure. Institutions constitute society and, moreover, it is the 'constellation' of them that do so. There is further evidence of this 'constitutional' view of society:

> The development of institutions is the development of society. The institutions are, in substance, prevalent habits of thought with respect to particular relations and particular functions of the individual and of the community; and the scheme of life, which is made up of the aggregate of institutions in force at a

[48]Elsewhere, Veblen indicates the central concern of his social evolutionary inquiry theory as the "the development of human life and of social structure"(Veblen 1899b, p. 189). Also Veblen's consistent use of the term 'scheme' is reference to social phenomena such as 'the scheme of life' (the division of labor and the state of the industrial arts), the cultural scheme, and the 'institutional scheme' for example, indicates his interest not only in the the elements of social life but the relations between these elements. The term 'scheme' is understood in the same sense as 'schematic'. See Veblen (1908, pp. 44-45) for an extended and detailed example.

> given point in the development of any society, may, on the psychological side, be broadly characterized as a prevalent spiritual attitude or a prevalent theory of life (Veblen 1899b, p. 190).

In this case the 'scheme of life' refers to that structural aspect of society more commonly referred to as the division of labor and, in Veblen's terms, the state of the industrial arts.[49]

If there is to be a multiplicity of institutions, how do we identify them individually? How are institutions to be individuated from one another for the purposes of 'selection'? Veblen indicates in the prior quote that institutions are substantially habits of thought with respect to particular relations of an individual to the community but this only raises the question of what a constitutes a specific relation. Veblen is generally not clear on this point. Some examples help to clarify and show that this substantive definition appears to hold — e.g. in the case of the "institution of the leisure class"[50] where the occupational role of an individual is that particular relation. This is corroborated in Veblen's example of a single institution that crosses class boundaries and, depending on the class, is referred to as "slavery, ownership, or royalty"[51] In general, there is an intricate relationship between occupation and the nature of the institutions in the culture scheme that arise. This can be seen in Veblen's broad history of Western culture. Initially, the behavior of humans is dictated by the instinct of workmanship, an evolutionary product of the struggle for existence due to 'material exigencies'. Their initial meager success — ie. relatively little or no surplus product — could not afford extensive institutional development; individuals were single-mindedly concerned with survival. The basic institutional character was largely based on the instinct of workmanship and the extent of institutional structure, including the division of labor, was small and of an undifferentiated character. This characterizes the savage cultural state. The evolution to the barbarian stage requires

[49]In some other cases, Veblen also refers to this as the scheme of material life and is a clearer statement of the distinction that is being drawn here. The scheme of life is economic in character; the scheme of culture is not. See Veblen (1909, p. 241).

[50](Veblen 1899b, p. 1).

[51]See Veblen (1908, p. 44).

an increase in the efficiency of production which is brought about by continued action of natural selection to give a fuller expression of the instinct of workmanship. With greater efficiency, a larger surplus is generated and the population increases, allowing for greater and further elaboration and differentiation of institutional structure. One direction this elaboration takes is in the emergence of 'exploitation' as a means of procuring the material means of life afforded by the increased surplus. The emergence of this mode of 'production' and its popularization into the institutional structure is the single most important characteristic of barbarian culture. With further elaboration and differentiation of the institutional structure along this line, a diffusion of the impact of the instinct of workmanship on the institutional structure occurs. This diffusion is supplemented by the formation of 'hybrids' as the increase in institutional structure gives greater relative effect to 'selective adaptation' over natural selection. This is a general characterization of the emergence of institutions from 'productive' activities. For the most part specific, individuated institutions receive less attention. General references to the 'scheme' or structured whole of institutions are more common in Veblen when it comes to the role of institutions in the process of social development. Moreover, certain anomalies arise when schemes of institutions are analyzed strictly according to their presumed definition as specific occupational relations. For example, if a scheme of institutions constitutes social structure and this social structure is an aggregate of particular relations regarding the occupation or productive role of an individual, then how is it that a "scheme of institutions in force in any given community — as exemplified, *e.g.*, by the language"[52] arises? It appears that the strict adherence to either the natural selection analogy and its multiplicity requirement or Veblen's substantive definition of individuated institutions (or both) cannot be maintained.[53]

Clearly 'language' cannot be described nor associated as an occupational relation

[52](Veblen 1915, p. 3).

[53]Elsewhere, Veblen argues that all institutions are economic in nature. This can be interpreted as referring only to the occupational scheme. While Veblen does state this, it does not remove the problem of reconciling the case of language.

in any of the usual senses, so some recognition must be made of the cultural aspects and elements in Veblen's work expressed in his use of the term. In general, references to culture are not rare, particularly where Veblen engages in the analysis of knowledge, and thus suggests a possible distinction or context where schemes of institutions as aggregates of occupational relations and schemes of institutions in the cultural sense can be differentiated in a manner that is loosely similar to the ulterior ends vs. serviceability type distinctions regarding instincts. To illustrate:

> The higher theoretical knowledge, that body of tenets which rises to the dignity of a philosophical or scientific system, in the early culture, is a complex of habits of thought which reflect the habits of life embodied in the institutional structure of society; while the lower, matter-of-fact generalizations of work-day efficiency — trivial matters of course — reflect the workmanlike habits of life enforced by the commonplace material exigencies under which men live. The distinction is analogous, and indeed, closely related, to the distinction between "intangible" and "tangible" assets. And the institutions are more flexible, they involve or admit a larger margin of error, or of tolerance, than the material exigencies. The latter are systematized into what economists have called "the state of the industrial arts," which enforce a somewhat rigorous standardisation of whatever knowledge falls within their scope; whereas the institutional scheme is a matter of law and custom, politics and religion, taste and morals, on all of which matters men have opinions and convictions, and on which all men "have a right to their own opinions" (Veblen 1908, p. 44).

And further,

> The scheme of life, within which lies the scheme of knowledge, is a consensus of habits in the individuals which make up the community. The individual subjected to habituation is each a single individual agent, and whatever affects him in one line of activity, therefore necessarily affects him in some degree in all his various activities. The cultural scheme of any community is a complex of the habits of life and of thought prevalent among the members of the community. It makes up a more or less congruous and balanced whole, and carries within it a more or less consistent habitual attitude toward matters of knowledge — more or less according as the community's cultural scheme is more or less congruous throughout the body of the population; and this in its turn is in the main a question of how nearly uniform or consonant are the circumstances of experience and tradition to which the several classes and members of the community are subject. (Veblen 1908, p. 39).

In the first passage there is clearly a distinction between the scheme of institutions and the state of the industrial arts; between the cultural scheme and the scheme of life. Further, unlike the scheme of life which is directly related to the actions of

the individual and which is derived from the consensualization of habits into a homogeneous set, the cultural scheme appears to stand apart from individual activity in some degree, is more holistic in nature, taking on general characteristics such as the prevalent or dominant habit of thought within its range, and thus suggesting a heterogeneity.[54] Simultaneously, something of a 'human vs. non-human' distinction can be established in regard to the manner and objects in which schemes of institutions take their effect. Habituation acts on the individual while 'selection' acts over the representative individual representing a given ethnic group. As with the earlier case, this example points toward the conjunction of two simultaneously operating processes which together are taken as the complete process of institutional change and development. There are the specific, ethnically delineated, individualistic, occupational institutions and there are the abstract, structural, selective institutions of culture. In recognition of this duality, the examination of the total structure of Veblen's theory can be undertaken.

5.3.3 The Structure of Veblen's Theory as Process

Both the human individual and the social entities in Veblen's social theory have been briefly examined and detailed. These elements and their related process are both seen as necessary to the complete characterization of his theory. To complete the examination, it is necessary to detail the nature of their relationships and to consider whether the complete structure of his theory is, in accordance with the earlier analysis of Veblen methodology — that is, whether the theory contains certain 'desirable' methodological features. First, the structure of his theory should ultimately be expressed in terms of process. Second, this process should be a 'closed' process. Third, some underlying unit analogous to energy and the role it plays in conservation laws of the physical sciences should be identified as the ultimate substance undergoing transformation within the process. Fourth, the means by which the process operates

[54]This is a necessary condition for there to be a dominant habit.

is through physical contact. Lastly, as a secondary condition, some means by which the causal sequence can be given 'direction-in-time' should be identified. Additional conditions are suggested by the analysis of the nature of the individual and social entities in Veblen work: that the individual is represented in an aggregated form similar to the populational view of species; and that a distinction be drawn between cultural schemes and occupational schemes of institutions in Veblen's analysis.

It was indicated earlier that the closure of Veblen's social process required both the process of instinct contamination and the process of habituation. The theory of instincts and instinct contamination took the existence of habits and institutions for granted; the process of institutional change and development takes the formation of habits for granted. Each requires the other to endogenize what each takes for granted. The term 'process of habituation' is misleading in this enlarged, more comprehensive process. In the narrow sense, habits are instilled in individuals (particularly in the representative individual) by institutional factors but also there is the process of habit formation and selection for the purposes of perpetuation and continuation. Thus Veblen's total or closed process is more aptly the joint operation of the contamination process and a process of institutional development (or extended habituation process) since habituation entails not only the supplanting of habits for behavior in the individual, but it also leads to future action within institutions — the maintenance and potentially, the alteration by the selected individual.[55]

The joint existence and operation of two process within Veblen's theory is suggested in the following: "But apart from selection as between relatively stable types of character and habits of mind, there is no doubt simultaneously going on a process of selective adaptation of habits of thought with the general range of aptitudes which is characteristic of the dominant ethnic type or types" (Veblen 1899b, p. 189). Selection in the first instance is restricted to stable types of character and habits of the representative individual and thus is more closely associated with Veblen's theory

[55] "... and the type of man so selected to continue and elaborate the institutions handed down from the past ..." (Veblen 1899b, p. 189).

of the individual. These habits are the particular occupationally related habits that define 'what is type'. The latter case of selection mentioned by Veblen appears to be selection from amongst stable types of character to define 'what and who is the dominant type'. This is a broader, more general, cultural process and is not well-specified in Veblen's work. Yet both are required and given equal emphasis by Veblen: "For the immediate purposes it need not be a question of serious importance whether this adaptive process is a process of selection and survival of persistent ethnic types or a process of individual adaptation and an inheritance of acquired traits"[56] (Veblen 1899b, p. 192). Elsewhere, Veblen also states that "for the present purposes, however, the question as to the nature of the adaptive process — whether it is chiefly a selection between stable types of temperament and character, or chiefly an adaptation of men's habits of thought to changing circumstances — is of less importance than the fact that, by one method or another, institutions change and develop"[57] (Veblen 1899b, p. 190). Lastly, "... there are indications that the variation in the effective temperament of modern communities is not altogether due to a selection between stable ethnic types. It seems to be to some appreciable extent a selection between the predatory and the peaceable variants of the several types" (Veblen 1899b, p. 217). It is clear that the process of human social development contains two distinguishable sub-processes.

The previous quotes also provides a hint at the identification of the underlying 'substance' of the process. The basic character of Veblen's social process is both material and immaterial. For Veblen,

> The forces which shaped the development of human life and of social structure are no doubt ultimately reducible to terms of living tissue and material environment: but proximately, for the purpose in hand, these forces may best be stated in terms of an environment, partly human, partly non-human, and a human subject with a more or less definite physical and intellectual constitution (Veblen 1899b, p. 189).

Both quotes taken together suggest that habits are the underlying 'substance' of the

[56]Note that these are in the reverse order to the present discussion.

[57]See previous footnote.

process. It is found in the non-human form as institutions and in the human form as behavior. If so, then habits can be treated analogously to 'energy' in some form of a social conservation law as suggested by Veblen's methodological standards. Evidence of Veblen's formulation of such a social law of conservation is found in his discussion of the conservation of archaic traits (Veblen 1899b, ch. 9). In this discussion Veblen sets out his general framework for the treatment of recent Western culture as a modern form of the earlier savage and barbarian cultures. The modern and recent past are linked to the earlier savage and barbarian era because of the conservation of behavioral traits. More generally, other corroborating evidence is found in the characterization of institutions and institutional schemes as 'lagging in adjustment', 'backward', and 'imbecile' where it is the conservation property giving rise to institutional non-adjustment. It should be noted that there is one other instance where Veblen discusses a principle of conservation. In Veblen (1901, pp. 280–282), there is reference to a "law of the conservation of economic energy" and the equivalence of the "product which results from any given industrial process" to "the expenditure of forces, or of effort". Clearly these refer to a law of conservation, but this discussion takes place in the context of a critique of classical economics and natural law. Veblen critique of the conservation of economic energy is a critique of the labor theory of value.[58] In this case, labor power is the 'energy' that is being conserved in orthodox classical economic theory. However, this is not the same conservation law that Veblen incorporates into his own theory of institutions. The fact that there exists one form of an economic conservation law of this does not preclude there being another principle of conservation. The methodological requirement of a 'conservation law' for Veblen's own theory is the conservation of archaic traits. Furthermore, unlike the law of the conservation of economic energy, this principle is not a 'physical' principle but a social principle. Veblen does not want to reduce, for his purposes, all economics to a 'material' basis.

[58]Under this theory, labor effort or power is the source of value in goods and commodities. This being the case, it also becomes a criterion of just distribution.

The 'action-by-contact' mode of operation is evident in Veblen's process of 'occupation habituation' and its general description as a coercive process. This aspect of Veblen's theory is uncontroversial and thus need not be treated further. As mentioned earlier, commentators have noted the 'Lamarckian' character of Veblen's process of institutional change. Somewhat less clear is how the 'contact' mode of operation applies to the case of the cultural scheme of institutions. If 'contact' can be construed as 'use' then in the case of language, for example, 'speech' would constitute 'contact'.[59] This example is largely conjectural and for illustrative purposes only. Veblen's cultural process remains obscure. With respect to the issue of a necessary direction-in-time, it was mentioned earlier that instinct diversity was treated as a function of the ethnic mixture. In Veblen's work, human social development is accompanied by greater ethnic mixture, thus suggesting institutional diversity, heterogeneity, and complexity in the scheme of institutions as possible measures on which to base temporal direction. A more comprehensive treatment of the question of homogeneity and heterogeneity and of dominance and suppression of traits will be given in the next chapter. Presently, attention is called to the potential use of such measures to establish a necessary direction in time of Veblen's social process.

In Veblen's analysis of the process of human social development and change, communities of individuals are delineated and self-separated into sub-populations. The "population is made up of a mixture of divers ethnic[60] elements, one or another of several persistent and relatively stable types of body and temperament" in which one or another of these groups "rises into dominance at any given point" (Veblen 1899b, p. 189). Within each of the ethnic subgroups, habits of thought and life arise from the individuals who comprise the groups and are subjected to a coercive and selective process which results in a homogeneous set of characteristics that gives the group its identity. This process includes the simultaneous operation of the contam-

[59]By extension, prescriptive grammar may be seen as form of selection or exclusion, likewise reporting standards, and so on.

[60]Ethnicity is at various times a materially based but also in other cases immaterially based — ie. a function of habits of thought.

ination and habituation processes. The stability of the ethnic type permits its use as a representative agent within Veblen's framework. This phenomenon of subgroup representative habit formation will be referred to as consensualization.[61] Through the consensualization process, the community's set of ethnically differentiated groups are associated with a group of ethnically differentiated habits. In contrast to these sets of representative individual type habits — which in total and across all groups constitute the scheme of institutions primarily composed of occupational norms — Veblen identifies or constructs a single, homogeneous set of habits from amongst the various types that play the role of the prevalent or dominant habits or 'ethnic' type. For example, there was the earlier example of the case of the 'scientific' point of view, treated as an institution or habit of thought. This population-wide homogeneous set of habits and institutions is equivalent to the scheme of institutions as culture and is derived also through the habituation process, with emphasis on legitimization, and the 'type' selective processes mentioned earlier. The process of legitimization — a process to which Veblen refers but does not much pursue[62] — translates habits and institutions from the heterogeneous set of the various representative agent types to the set of dominant, homogeneous habits of the cultural scheme. And lastly, the process of 'selection' acts from the cultural scheme back to the habits of the ethnic and occupational institutional structure. Precisely at this juncture — where the 'representative' agents for each and all of the ethnic groups within the community contacts the general and overall impact of the cultural scheme — is the focus of Veblen's social theory and the point from which social dynamics arise. That is, the common ground and the process at the center of the twin developments of humans and culture are habits and the (extended) habituation process.

[61] See page 81.

[62] For example, "(t)his inquiry does not presume to deal with the origin or the legitimization of the postulates (of science) (Veblen 1908, p. 32).

5.4 Summary

The central point of argument presented in the chapter is that Veblen's Darwinian distinction is methodological in character and that the underlying basis for the distinction rests on the differences between two types of causal relations. This distinction is implemented as a principle of demarcation and an implicit theory choice criterion. Post-Darwinian science is the 'modern' form and is distinguished by its use of cumulative causation; pre-Darwinian science is characterized by its use of natural laws. Cumulative causation was further analyzed to reveal certain features. It was shown that specific causal relations derived from observation are not sufficiently universal or invariant (stable) to act as the foundation of theoretical structure. Instead the facts of process are used. Second, cumulative causation taken as reducible to a conservation law implied a principle of equivalence between the cause and effect in the causal relation and necessitates the definition of a concept of 'energy' in theory. Lastly, the material, cumulative and self-propagating nature of the transient sequence between the initial cause and final effect was analyzed to show the underlying mode of operation and to characterized a 'complete' process. Cumulatively causal sequences operate through action by contact and as such the sequences act continuously and collectively (cumulatively). The complete characterization of dynamic processes requires characterization in terms of a closed process.

Both the human individual and social entities in Veblen's works were briefly examined and detailed. The individual was characterized as the composite of three behavioral influences: tropisms, instincts, and habits. Social entities included institutions, schemes of institutions as occupational relations and as 'culture'. Society, in total, is treated as a composite scheme of institutions and found to be of these two types. The overall theory, as process, of human social development must consider all of these elements. In accordance with the earlier analysis of Veblen methodology, certain properties of the theory must be present — that is, the structure of his theory should ultimately be expressed in terms of process; this process should be a

'closed' process; some underlying unit analogous to energy in conservation laws should be identified; the means by which the process operates should be through contact; as a secondary condition, some means by which the causal sequence can be given 'direction-in-time' should be identified. Additional conditions are suggested by the analysis of the nature of the individual and social entities in Veblen's work: that the individual is represented in an aggregated form, similar to the populational view of species; and that a distinction be drawn between cultural schemes and occupational schemes of institutions in Veblen's analysis. On the basis of the analysis given, Veblen's theory reasonably satisfy his set of methodological requirements and thus is Darwinian in the methodological sense.

Chapter 6

Evolutionary Biology in Veblen's Theory: Evidence and Comments

6.1 Introduction

The examination and analyses conducted in the previous chapter focused principally on the structural aspects and features of Veblen's work. In this chapter, the emphasis is shifted toward the content of his theory. As part of the reorientation, the assessment of the Darwinism in Veblen's work proceeds from the 'traditional' interpretation, that Darwinism is substantively the Darwinian biological theory. Thus the underlying objective of this chapter is to identify and examine within Veblen's work elements borrowed from Darwinian and other evolutionary biological theories. In order to reduce the potential degrees of freedom in the identification of biological elements and to provide a criterion between the rhetorical and the substantive uses of evolutionary ideas, a distinction is drawn between the *usage* of evolutionary terms and the *implementation* of evolutionary ideas. 'Implementation' entails 'usage' but adds the requirement that the idea be sufficiently inclusive so that relations between several elements within the scope of the idea exist. This distinction is intended to mirror Veblen's requirement that theory be reducible to terms of process. Presented first are the results of a search through Veblen's work for these biological Darwinian elements and ideas. This search is divided into three categories: elements and ideas that correspond to Darwinian evolutionary patterns; elements and ideas that correspond to Darwinian evolutionary processes; and elements and ideas that correspond to 'alternative' nineteenth and early twentieth century biological theories. Second, a selected survey of commentators on Darwinian or evolutionary character of

Veblen's work is presented. The views of Hodgson (1992), Harris (1934), and Edgell and Tilman (1989) are discussed in the survey. Inclusion in the survey is based on the extent to which the material identified and examined both evolutionary elements and processes.

6.2 Elements of Darwinian Evolutionary Theory

The survey and review of evolutionary biology and its history, and of social Darwinism presented in the previous chapters forms the background against which the question of the Darwinian character of Veblen's theory is explored. Given the dates of Veblen's career, the state of evolutionary biology during the period 1890 to 1915 is of particular interest is.[1] Following the distinction drawn in the earlier chapters, Darwinian elements within Veblen's work are divided into those relating to patterns and to process(es).

6.2.1 Evolutionary Patterns

One prominent aspect of orthodox Darwinian evolutionary theory is its characterization of evolution as descent with modification. Since orthodox Darwinian evolution is adaptive, undirected, divergent and open-ended, patterns of descent should show no evidence otherwise. Typically, when graphical representation are made, the pattern is expressed in the form of a tree or 'lineage' chart.[2] If an evolutionary pattern is Darwinian, then the tree representation should depict a tree with many divergent branches with no apparent identifiable central 'trunk' that might indicate a direction of evolution (eg. greater complexity or intelligence) or an emphasis on an ideal pre-designed sequence (eg. the biogenetic law). Obviously such evolutionary patterns cannot be represented by a 'lineage' chart. Since graphical representations, particularly tree

[1] Veblen's works extends before and after this period but it is during this period when he maintained the most explicit interest in biological ideas.

[2] A lineage chart is similar to a tree except that some measure of evolution is represented on an axis.

diagrams, do not capture all of the essential characteristics of evolutionary patterns nor are they immune or resistant to biased representations or re-interpretations that suppress an adaptive, undirected pattern in favor of a directed one (or vis-versa), they generally cannot be relied on to conclusively distinguish between cases. In fact, in the case of spurious direction or progress the adaptive pattern will show a direction of progress coincidentally. In the case of 'true' adaptive evolution, any such progress or directedness must be shown to arise not out of necessity but accidentally but this distinction is not captured in the graph. One feature of Darwinian adaptive evolutionary patterns that may better serve as a means to identification is the explanatory requirements that are implied by descent with modification. Recall that similarities between species must be explained by way of a common inheritance of advantageous differences and differences must be explained by the accumulated advantageous hereditary differences (Dodson and Dodson 1985, p. 3). That is, the explanation refers only to advantageous traits so that any given common character is advantageous for both species, and differing characters are advantageous for the species relative to their environments. This rules out the explanation and treatment of co-existing similar species where one is viewed as an earlier stage of the other. This explanatory requirement also cannot be represented in graphical form but is indicative of Darwinian descent.

With respect to evolutionary patterns, Veblen does not to adhere to the explanatory standards that follow from the orthodox modern conception of Darwinian evolutionary theory. In explaining earlier stages in the history of Western mankind, Veblen often uses examples of existing 'lower' cultures to clarify his point and speaks of 'stages of development' indicating a direction if not a design to evolution. For example,"The Polynesian islanders generally show this stage (early barbarism) of the development in good form" (Veblen 1899b, p. 2, my comments) or "... the cultures loosely classed as upper-savage or lower-barbarian quite commonly show much the same institutional traits as those indicated here (and) ... comes in sight as a matter-

of-course, *e.g.*, among the Eskimo . . ." (Veblen 1915, p. 324, fn.).[3] Implicit but readily discerned in these examples is the view that an existing culture is comparable to an earlier stage of Western culture or at least some prior stage of some other culture along some scale of progress. The basis for explaining common characters makes reference to a stage in a progressive scheme and not by common ancestry nor inheritance of common advantageous traits; neither are differences explained in terms of advantages relative to local environmental conditions. It is clear in these examples that adaptive evolution of human culture is not what Veblen had in mind.

Nonetheless, several objections may be raised. First, it may be argued that cultural evolution is theoretically or ontologically distinct and independent of biological evolution so that Veblen's Darwinian character is preserved by limiting its role to the biological sphere. That is, Veblen theory contains Darwin's but does not extend it to the social or cultural sphere. For example, racial evolution — a biological concept — appears to be adaptive. Veblen refers to a "process of selective adaptation of race" and how "through long continued natural selection among this hybrid population, under local conditions that have strongly favored a given one of these racial types as against its co-rivals, a so-called 'pure' line may have been established" (Veblen 1899b, p. 221; 1915, p. 284). Thus, there are grounds for support of this argument but it is somewhat beside the point since it in effect ignores the issue of Darwinism in the social sphere to argue that the Darwinian biological aspects of Veblen's theory are the Darwinian biological aspects of the theory. Potentially a more serious problem with the argument is the resulting biological reductionism, depending on the degree and scope to which the social aspects of Veblen's theory must be interpreted as biological in order to defend the Darwinian character. Further, it is also somewhat beside the point as it relies more on the process of natural selection rather than directly upon the pattern of evolution that results. Thus this argument does not succeed. As a second defense, it may be argued that historically Darwinism in the nineteenth century

[3]See also Veblen (1906a, pp. 7–8) and Veblen (1914, pp. 43–44).

"often included a commitment to the inevitability of progress, a position that would be repudiated by modern biologists as a violation of the principles now thought to underlie Darwin's approach to the issue" (Bowler 1988, p. 6). Veblen's progressive pattern of human evolution can be construed as Darwinian in a historically accurate sense. Darwinism deviates from the 'modern' interpretation of Darwin's theory of evolution as purely a matter of the natural selection process and adaptive evolutionary patterns. However, to the extent that the impact of Darwinism is intended to be stronger than a metaphor, certain consequences must then be reconciled or explained. Inevitable progress is highly contradictory to the well-known quality of Veblen's evolutionism that no predetermined results are entailed necessarily in the process of cumulative causation.[4] Also, this is counter to the then current general trend in the evolutionary biological sciences of giving greater emphasis to evolutionary patterns over evolutionary processes, a distribution of emphasis which is not found in Veblen's work. Therefore the second line of defense also does not succeed and thus, in reference to evolutionary patterns solely, the immediate direct evidence in the form of evolutionary explanations of 'species' similarity and differentiation suggests that the Darwinian characterization, as adaptive evolution, is inaccurate.

6.2.2 The Evolutionary Process

The second prominent character of orthodox Darwinian evolutionary theory is the natural selection process and its role as the sole means of evolution. Its adaptive nature has been discussed in the preceding subsection; here the focus is on how the process operates to obtain the evolutionary results.

For the purposes of *uniquely* identifying the natural selection process, the one central feature that sets Darwin's process apart from the others is its eliminative subprocess.[5] Elimination of the relatively unfit gives the result that a proportion of

[4]See Veblen (1908, p. 32).

[5]To accommodate those who prefer to express the operative mechanism in terms of successive procreation, 'elimination' need only be interpreted as elimination from reproduction to include the case. It should be noted that this is a 'modern' restatement.

species population in any given generational cohort will be exterminated. Typically, the Darwinian process is equated with the fact of 'the struggle for existence'. However, without stating either the 'how and why' the struggle occurs (food supply constraint) or the means and effects of the struggle (elimination and the survival of the fittest), the use of the struggle for existence alone can not sharply distinguish Darwin from the alternative theories — that is, the fact of the struggle for existence alone is not sufficient for precise identification. Other evolutionary processes make use of the fact but with differing consequences. For example, in Spencer's evolutionary process, the struggle for existence gives rise, primarily, to a greater effort towards fitness; elimination is only a secondary feature of his theory.[6] When these conditions are made explicit, Darwin's natural selection is necessarily a matter of elimination; but note that this does not imply that Darwin's process operates solely from elimination. Survival, reproduction, and inheritance are all required for the operation of natural selection. Again, for the purposes of identification, it is not how the complete process operates, which was discussed in the review, but what aspects of natural selection can be used to 'single it out' from the other evolutionary processes. This fact is all the more crucial when the historical context requires consideration of a richer theoretical milieu where an emphasis on reproduction, in the absence of elimination prior to reproduction, more strongly suggests an interest in developmentalist biology, Mendelian evolutionism or breeding experiments (and hereditarian concepts) than Darwinism.

There can be no question that Veblen makes reference to the natural selection process and the 'struggle for existence' in his work and that he used such terms to identify and distinguish the processes at work in his theory. For example,

> Social structure changes, develops, adapts itself to an altered situation, only through a change in the habits of thought of the several classes of the community; or in the last analysis, through a change in the habits of thought of the individuals which make up the community. The evolution of society is substantially a process of mental adaptation on the part of individuals under the

[6]See (Bowler 1988, pp. 158–159).

> stress of circumstances which will no longer tolerate habits of thought formed under and conforming to a different set of circumstances in the past. For the immediate purpose it need not be a question of serious importance whether this adaptive process is a process of selection and survival of persistent ethnic types or a process of individual adaptation and an inheritance of acquired traits (Veblen 1899b, p. 192).

Clearly, there are references to selection and survival. Furthermore, selection and survival type processes are contrasted with the adaptive and use-inheritance type. From the perspective of the 'alternative' characterization of Darwinian theory, there is evidence of Veblen's use of Darwinian theory on the basis of terminology. Still, some caution is not unwarranted here. If the references to selection processes were separated between specific references to natural selection and to selective adaptation, then the latter would show itself as more frequent. This does not presume that the two terms could not refer to the same process but at the same time there are sufficient grounds for considering that differentiated processes do exist under Veblen's framework. Nor does it presume that one can not be contained in the other but it does raise the question of which 'process' is of greater interest to Veblen. On this point, Veblen is clear: he is not interested in apportioning emphasis nor dividing his analysis between the various subprocesses. Thus, it seems that the potential utility in using the 'elimination' criteria is lost given that one could always counter that he was aware of the elimination process in the selection type processes and had this in mind but did not care to pursue it.

Other direct evidence is available. In one of the relatively rare occasions that Veblen does explicitly refer to and discuss natural selection as it applies to economics, his usage of the ideas is somewhat odd. For example, in defining the explanatory agenda of economic science in reference to the contradiction between the instinct of workmanship and irksomeness of work, he states that

> It is incumbent upon the science to explain what are his (economic man's) limitations and how he has achieved his emancipation from the law of natural selection. His emancipation from the law is, indeed, more apparent than substantial. The difference in this respect between man and his sometimes

> competitors in the struggle for survival lies not in a slighter but in a fuller adjustment of his propensities to the purposes of life of the species. He distanced them all in this respect long ago, and by so wide a margin that he is now able, without jeopardy to the life of the species, to play fast and loose with the spiritual basis of survival (Veblen 1898a, pp. 79-80, my comment).

Several interesting points arise from that passage. First, Veblen is obviously arguing that natural selection applies to economic man, that the emancipation from the law of natural selection is not absolute. It is relative emancipation that when compared with other animals is hugely in favor of humans — that is, man is free but not entirely nor without conditions and qualification. Further, he suggests that the apparent emancipation or relative exemption from the law is result of having extensively adapted in an earlier time under that the strict application of that very law. Secondly, Veblen does implicitly recognize the fact of elimination as a consequence of the law of natural selection since the life of species can be placed in jeopardy. Elsewhere, survival is seen as coming "by virtue of overcoming and eating their rivals" and "by selective elimination of unfit individuals and lines of descent" (Veblen (1898a, p. 86); Veblen (1899b, p. 212)). Thus the eliminative feature appears to be present in the process of natural selection and Veblen's usage accords with Darwin's. However, a closer examination of the first point raises doubts. Here, there is the suggestion that natural selection has given rise to the case where natural selection itself becomes relatively inoperative or that there exists slackness in the 'struggle for existence' constraint. Darwin's natural selection relies, particularly where exogenous geological environmental processes are concerned, on Lyell's uniformitarianism whose fundamental principles take the constancy, in kind and in degree, of environmental processes for granted so that past events can be explained by presently existing process.[7] It is necessary under Darwin's natural selection process that the adaptive 'pressure' be constant since natural selection is a 'slow' process. If there are changes in the pressure then the species cannot adapt to a 'moving target'. But because Veblen argues for the relative, apparent emancipation of the law of natural selection, Veblen cannot be seen as Darwinian

[7]See Bowler (1984, p. 148).

in this regard. His relative non-binding or suspended case of natural selection could not be used to explain adaptation. Once again it could be argued that the usage of Darwin in Veblen's work is metaphorical and that this requirement is not a significant detail but Veblen was aware of this requirement and argued at length over this very question. In the discussion of modern societies and new races, Veblen argues against a 'short-run' means of generating a stable hybrid — one that could be considered a new race — precisely because the processes in the environment lack sufficient continuity and constancy. That is, "(i)t is only under the (presumably) stable or slow changing conditions of prehistoric times that this population could have conceivably been exposed to sufficiently active selective forces through a sufficient series of generalizations to give rise to a selectively established hybrid type of the kind in question" (Veblen 1915, pp. 290-291). Thus on the grounds of the eliminative character of the process of natural selection, Veblen cannot be conclusively treated as Darwinian in this sense. At times he directly refers to the struggle for existence, natural selection and the eliminative feature of the process. Nevertheless, his primary explanatory objectives involve conditions that render natural selection relatively inoperative. His 'natural selection' incorporates feedback effects such that the product of the process impacts on the intensity of the operation of the process itself. Darwin made no provision for such results as natural selection is taken as universal and invariant.

6.2.3 Alternative Evolutionary Processes

Using the criteria associated with the traditional orthodox understanding of Darwinian theory, the Darwinian characterization of Veblen is not sustainable. However, there are some indications that the alternative characterization of Darwinian theory may apply. One implication from adopting the alternative history of evolutionary theory is that additional and potentially competing processes are considered as influential or incorporated into the Darwinian theory at the turn of the nineteenth century. Another result of the adoption would be to shift the 'major' debate at the

turn of the century away from Darwinism vs. Lamarckism. Any debate here is better seen as a family dispute between two developmentalist type processes. Rather, the more significant debate occurred between Mendelism and developmentalism, between continuous and saltative evolution, between soft and hard heredity. To explore the potential impact the new interpretation may have on the Darwinian character of Veblen's work, an examination of Veblen's work for the developmentalistic Darwinian characters and the Mendelian processes is undertaken.

6.2.3.1 Developmentalist Darwinism

Under the alternative view, the character of evolutionary biology in the last half of the nineteenth century is developmental and marked by the use of the growth analogy, the morphological approach to science, and by the pre-occupation with progression. Even Darwin's theory of evolution was influenced to some extent by this general analytical framework however much certain features of his theory, in the modern sense, conflict with developmentalism's basic tenets. For the purposes of assessing the extent of developmentalist influences on Veblen, the growth analogy and the Lamarckian use-inheritance mechanism should be taken as indicators; the progressionist element has been sufficiently established in the previous section on evolutionary patterns.

The test for developmentalist influences through the presence of the growth analogy appears to be ill-suited to the task in the context of social theory; Veblen's concern is primarily at the psychological or intellectual level and not the biological. Social phenomena do not lend themselves to characterization in terms of shape, of either the total body or of its organs. Outwardly, the test results would be misleading. Furthermore, Veblen's view of modern science as matter-of-fact and anti-animistic would certainly not countenance the projection of human developmental form into cultural and social facts (Veblen 1898b). Yet, there are properties, albeit abstract properties, of Veblen's scale of evolution, that are traditionally linked to scales based on human development. Differentiation and complexity as a measure of advanced development

similar to that of Lamarck's theory of directed evolution, appear in Veblen's work.

In the *Theory of the Leisure Class*, Veblen describes the advancement of human culture in terms of differentiation and elaboration.

> At an earlier, but not the earliest, stage of barbarism, the leisure class is found in a less differentiated form. Neither the class distinctions nor the distinctions between leisure-class occupations are so minute and intricate (Veblen 1899b, p. 2).

Later, "in communities belonging to the higher barbarian culture there is a considerable differentiation of sub-classes within ... the leisure class; and there is a corresponding differentiation of employments between these sub-classes"[8] (Veblen 1899b, p. 2). And prior to the barbarian stage of development, "a farther step backward in the cultural scale — among savage groups — the differentiation of employments is still less elaborate and the invidious distinction between classes and employments is less consistent and less rigorous" (Veblen 1899b, p. 6). The movement along the differentiation scale follows "as the population increases in density, as human relations grow more complex and numerous, (so that) all the details of life undergo a process of elaboration and selection (Veblen 1899b, p. 44, my comments). On the basis of indirect evidence, the growth analogy appears to have had an influence.

Some direct evidence also exists. As might be expected, the influence of the growth analogy manifests in the application of the biogenetic law:

> As in many other features of child life, the child reproduces temporarily and in miniature, some of the earlier phases of the development of adult man. Under this interpretation, the boy's predilection for exploit and for isolation of his own interest is to be taken as a transient reversion to the human nature that is normal to early barbarian culture proper. ... In the common run of cases, these disturbances are confined to the period of adolescence. They recur with decreasing frequency and acuteness as youth merges into adult life, and so they reproduce, in a general way, in the life of the individual, the sequence by which the group has passed from the predatory to a more settled habit of life (Veblen 1899b, pp. 253–254).

While this is strongly suggestive, it should be noted that the savage stage is excluded from the sequence; presumably this stage would correspond with early childhood

[8] Although it is not explicit, classes other that this one are also presumably further differentiating on advancement.

stage which presumably be marked by relatively harmless play and simple work. It any event, this absence does not seriously detract from the fact that influences of the growth analogy can be found.

In Veblen later works, the evolutionary scale of differentiation is supplemented by a similar scale applying to race. Earlier man is marked by 'pure lines' while modern man is marked by hybrids (Veblen 1914, p. 20). This scale is not to be interpreted naively so that pure lines imply strict homogeneity. Rather diversity is the norm but,

> (t)his diversity of native character is noticeable among all peoples, though some of the peoples of the lower culture show a notable approach to uniformity of type, both physical and spiritual. The diversity is particularly marked among the civilized peoples, and perhaps in a peculiar degree among the peoples of Europe and her colonies. The extreme diversity of native character, both physical and spiritual, noticeable in these communities is in all probability due to their being made up of a mixture of racial stocks (Veblen 1914, p. 15).

At the same time, pure-line and hybrid racial types also denote stability and instability, respectively (Veblen 1914, pp. 18, 23–24, 35). The later emphasis on stability should not be taken as an indication of a diminution of the measure of differentiation and elaboration; racial types will adjust along the scale of stability with the "still farther advance in that cumulative complication of institutions and intricacy of ways and means that is involved in cultural growth (Veblen 1914, p. 20; see also 1915, pp. 47, 141). Although Veblen added the stability measure of racial development, this did not alter the nature of his theory of human social development. Veblen did also discuss stability and homogeneity in his earlier work, but it seems less prominent and more tentative (Veblen 1899b, p. 218). It does give continuity to the use of this measure and it implies that Veblen was influenced and concerned with growth throughout his career.

Where Veblen does appear to have changed is in regards to Lamarckian processes. The second test of the developmentalist influence involves Lamarck's use-inheritance mechanism. This test, as explained earlier, is not conclusive in and of itself but is corroborative. In Lamarck's theory, two processes of evolution are operating to give the mainly linear progressionist pattern of evolution. The minor divergent branches

are the result of the use-inheritance mechanism. If operating autonomously, this process will give rise to an adaptive evolutionary pattern; likewise if in conjunction with another adaptive process.[9] If it operates in conjunction with a directed evolutionary process, then results cannot be determined. It depends on the emphasis given to each. Thus when the Lamarckian use-inheritance is detected, it cannot conclusively imply the nature of the evolution. It corroborates the influence of progressionism by providing the necessary conditions for an interpretation in terms of a developmental sequence. The characteristics of the parent organism in the course of its development (growth to maturity) are influenced by external factors. The organism transmits these characteristics by regenerating various parts, parts which have formed under various environmental stresses. Occasionally, the joint use of Darwinian and Lamarckian use-inheritance processes has been rejected on the grounds that they are fundamentally incompatible. Historically, most evolutionary theories in the last quarter of the nineteenth century were of the multi-process type, where the nature of the evolutionary pattern depended on the emphasis.

To repeat, the Lamarckian use-inheritance mechanism can be found in Veblen's earlier works but does not appear to be present in his later works. In the *Theory of the Leisure Class*, Veblen makes reference to a "process of an inheritance of acquired traits" and he explains that "class difference in temperament may be due in part to a difference in the inheritance of acquired traits in the several classes" (Veblen 1899b, pp. 192, 248). This process acts on the human material and is described as 'coercive' and 'educational' (Veblen 1899b, pp. 190, 212). By way of use of the Lamarckian mechanism, Veblen explains how industrial traits "tend to obsolescence through disuse' (Veblen 1899b, p. 243). As evidence of the transmission of acquired effects, his description of how the present situation acts "upon men's habitual view of things" and thus alters or fortifies "a point of view or a mental attitude handed down from the past" should suffice in showing how habits are transmitted and then altered

[9]This is abstracting from spurious non-adaptive results.

further (Veblen 1899b, pp. 190–191). In later works, Veblen rejects the application of the process to the 'habitual' traits of man. For example, national differences are defined as "of an institutional kind — differences in acquired traits not transmissible by inheritance, substantially differences of habituation" (Veblen 1915, p. 9; see also p. 285). Instincts, presumably of a different order than habits, are similar to tropisms (Veblen 1914, p. 10). Therefore, instincts should also "stand out, to all appearance, as ... physiological traits transmissible by inheritance intact and unmodified" (Veblen 1914, p. 9). In relation to the later works, the human material, or aspects or the human material, is either heritable and invariant or acquired but not transmissible by inheritance; the Lamarckian use-inheritance mechanism is no longer operative as with Veblen's earlier version of the theory.[10]

To summarize, Veblen's early work was influenced to some extent by the developmentalism of the nineteenth century. The Lamarckian 'test' corroborates this suggestion in the case of evolutionary patterns and progressionism. In his later work, hereditary characters have become fixed and stable, suggesting the influence and adoption of Mendelian theory. This is explored next.

6.2.3.2 Mendelism and Veblen

Tracing the Mendelist influence in Veblen's later work is a task made simple by the 'novelty' of the notion of hard heredity. By way of reference, Veblen refers to the "unit characters, in the Mendelian sense" (Veblen 1914, p. 13; see also 1914 pp. 9, 284.). By way of use, there are no actual applications of Mendel's laws of inheritance to specific unit characters but only descriptions of them (Veblen 1915, pp. 9–10). Rather, Veblen's interest is with the mutation theory, to which he refers in the title of his 1913 essay (see also Veblen 1914, p. 16; 1915, p. 287). In like fashion to the mutation theory, variants are classified by magnitude and each type associated with

[10] Veblen does maintain that there are these mechanisms but they operate on physiological features. These types of variations are not considered permanent nor relevant to the racial line (Veblen 1915, p. 125–126).

a specific process. Veblen explains that,

> (b)y consequence of their hybrid composition the individual members of these nationalities vary more widely in respect of their native capacities and aptitudes than would be the case in any pure-bred people. So that these peoples each present a much larger diversity of personalities than would be found among them if they were not cross-bred (Veblen 1915, p. 9; see also pp. 11-12, Veblen (1914) pp. 14–15).

In general terms, in later works Veblen shifts towards calling variants mutants.

On the topic of hereditarian thought in general, reference to the concepts and facts of the animal breeders can be found extensively in both the early and later works and, surprisingly, gives much consistency to Veblen's work. In Veblen (1898a, p. 92), there is an account of a higher culture reverting to an archaic, peaceable character. In Veblen (1899b, p. 46), there is a discussion of the 'high-bred gentleman' and 'under-bred' manners (see also pp. 70, 75). Cultural development is effected by "selectively conserving certain human traits" (Veblen 1899b, p. 213). The similarity of these concepts and descriptions to those his later work gives strong evidence that the issues of racial lines, hybrids, and reversion — ie. breeding and heredity — formed a significant and integral part of Veblen's conception of culture. This interest, with the aid of Mendelist ideas, found more precise expression in the later works.

6.3 Commentators

Following the examination of Veblen's works for biological evolutionary elements, the views of certain commentators who hold that the locus of Veblen's Darwinian or evolutionary character is principally a fact of parallel structures and ontological entities are presented and critically examined in light of the previous findings.

6.3.1 Hodgson

Most recently, Hodgson (1992, p. 296) has declared that "on the whole Veblen was relatively successful in establishing the basis of a Darwinian economics "but that Veblen's imprecision in his use of biological terms, the incompleteness of biological

theory at the time, and the complexity of dynamic economic systems have limited its theoretical development." The basis to which Hodgson refers are the parallels between the principle of idle curiosity and species variation;[11] the institution and the unit of selection; and certain mechanism and the process of the struggle for existence. The key ontological idea that permits the parallels is the conception of a

> cumulatively self-reinforcing institution as a unit of evolutionary selection, to be subject to the procedures of mutation and selection. For Veblen, the objects of economic evolution and selection are institutions. Their fundamental genetic component is habits and instincts (sic)" (Hodgson 1992, p. 296).

In addition to the formation of analogies, Hodgson also argues that Veblen's adoption of the Darwinian metaphor was based on the properties of the notion of cumulative causation and its opposition to equilibrium results (Hodgson 1992, p. 286).

By emphasizing the role of the gene in the Darwinian characterization of Veblen's theory, Hodgson leans markedly on the modern orthodox conception of Darwinian natural selection — ie. the genetical theory of natural selection. Hodgson sees Veblen as having discovered that the "durable character of institutions" is equivalent to the notion of the gene (Hodgson 1992, p. 293). Presumably the durability is in reference to the fact that the genetic material or alleles is transmitted across generations intact[12] and unchanged in spite of what changes occur to the body of the host. If by 'durable character' Hodgson is referring to the constituents of institutions — ie. "their genetic component" then when the institutions are seen as the units of selection, natural selection does not select genes directly and thus the Darwinian theory is not the modern genetical theory. However, if Hodgson does see the institution as equivalent to the gene then it is the modern, genetical theory since genes are directly the unit of selection. This latter interpretation is supported by Hodgson's characterization of Darwin's theory which includes within the operation of natural selection

[11]The use of idle curiosity as a principle of species variation is attractive but incomplete. Idle curiousity in Veblen is used restrictively to explain the emergence of non-pragmatic knowledge and institutions. Since not all knowledge and not all institutions are non-pragmatic in nature, idle curiousity as a mechanism of species variation is incomplete at best unless it is the origins of all pragmatic knowledge and institutions. The latter does not appear to be the case.

[12]The alleles are consistently of the same value under normal conditions.

the preservation of "variations or gene combinations" (Hodgson 1992, p. 286). The significance of this point, besides historical accuracy, is whether in the former case evolution of institutions is saltative or whether it is continuous, since as a matter of history, the former case is very much like De Vries' mutation theory.

It is difficult to determine whether Hodgson intends to identify Darwinism with a strictly biological conception that would be representative of the state of the theory at the turn of the century. Although he indicates that Veblen had a contemporary knowledge of evolutionary biology, it does not imply that Hodgson's portrayal is accurate. First, Hodgson's characterization of the natural selection process does not contain sufficient detail that would be needed to clearly outline an operative version of Darwin's natural selection. For instance, he claims that a feature of natural selection is the presence of sustained variation amongst the (individual) members of the population (Hodgson 1992, p. 286). Quite correctly, variation is the necessary raw material from which the process of natural selection selects but without restricting the type of variation to random variation, as Hodgson should do, the resulting pattern after selection that will occur cannot be determined to be adaptive, directed, or both. Secondly, Hodgson identifies with Darwinian natural selection a principle of heredity whereby offspring resemble parents more so than any other member of the species (Hodgson 1992, p. 286). It is true that some mechanism of inheritance is necessary for natural selection to result in evolutionary outcomes, but it is unclear that, even in the weakest possible form, it must be a process that conserves or preserves type or character. For example, historically Darwin's theory of pangenesis is a blending theory of inheritance which makes no such restriction that there must be some form of a stronger resemblance of the offspring to its parents. If it is accepted that Darwin's progeny are intermediate to its parents and one adopts a population notion of species where character and variation are measured on some continuous scale, then given the continuity of measure it would seem almost certain that the intermediate form is closer

to some other member of the population than it would be to its parents.[13] 'Stability' in this sense is not necessary. Furthermore, if it were true and the population was closed, there would be little variation over time given common ancestry. A principle of variation would need to be specified; Darwin, historically had no explanation for variation and thus would not assert such a restriction particularly in light of Jenkin's critique. Without an explanation of how variation occurs, this principle contradicts the first.

These problems would serve to restrict the use of the structure of Darwinian theory for the purposes of analogy, but Hodgson does point out cases of it limited use. One analogy, mentioned above, that can be applied is the notion of the institution as a unit of evolutionary selection. From the comparison of institutions to genes (or habits and instincts to genetic components), the character of institutions is seen as self-reinforcing and cumulative. But, by suggesting that there is a strong analogy between the stable gene and the self-reinforcing, cumulative institutions,[14] certain properties of institutional change have not been taken into account. First, if institutions are relatively stable and autonomous, the process of institutional differentiation and elaboration is ignored. For example, the leisure class is an institution which was originally undifferentiated in savage society due to the absence of sufficient economic surplus but in barbarian cultures the division of labor becomes more specialized. Genes do not subdivide and do not subdivide in extent according to the level or magnitude of some external factor.[15] The simple cell division and recombination process that the gene analogy could provide, and only if it were stretched to include the association of the Mendelian unit character with the chromosome theory and only if the institution were seen as the cell, is insufficient for the articulation of more detailed categories within a given institution. Secondly, the question of institutional stability

[13]Hodgson presumably is aware that a single variate measure based on a weighting of a non-singular, non-empty set of variables as an index of resemblance is subjective — eg. social welfare functions.

[14](Hodgson 1992, p. 293).

[15]During Veblen's career, genetic mutation was seen as a random event so that the radiation effect on mutation level cannot be part of the analogy.

on the whole is misleading. According to Veblen, "(t)he scheme of institutions in force in any given community — as exemplified, e.g., by the language — being of the nature of habit, is necessarily unstable and will necessarily vary incontinently with the passage of time, though it may be in a consistent manner" (Veblen 1915, p. 5). The homogeneity, blended, or fused nature of institutions is not to be confused with stability of structure though its effect may be constant. Thirdly, if institutions are stable genes, then the process of institutional change must be saltative. However, there are instances where "(t)he evidence afforded by the usages and cultural traits of communities at a low stage of development indicates that the institution of the leisure class emerged gradually during the transition from primitive savagery to barbarism" (Veblen 1899b, p. 7). The problem with using the durable character of institutions as an indicator of the gene parallel[16] is that the durability depends on external conditions, such as distance from the conditions of the struggle for existence. This problem arises because the nature of Veblen's cumulative causation is under-analyzed by Hodgson. In specifying Veblen's cumulative causation, Hodgson identifies that cumulative causation is concerned with and emphasizes the transient stages between initial cause and final effect so much so that the question of final effect is of little interest. While this is a well recognized feature, it does not completely identify the cumulative causation process. Hodgson parallels this process with Darwinian natural selection without considering the nature of the transient effects the process must cause, ie. without considering how such an approach can potentially explain how an aversion to work, which has no survival value arises, from a process which can only explain existence in terms of survival values.

6.3.2 Harris

Another commentator of Veblen's Darwin character is Harris (1934). He characterizes Veblen's evolutionism as institutional mutationalism and seeks to distinguish it from

[16]To the extent that the parallel existed. In 1899, the Mendelian laws had not been rediscovered. One of Hodgson's primary quotes on the durability of the gene is taken from this work.

Marx's economic evolutionism which is based on Hegel's dialectics. Veblen's Darwinian evolutionism is based on the principle of the "'struggle for existence' and 'natural selection', the Mendelian law of inheritance and the mutation theory of de Vries" (Harris 1934, p. 58; see also p. 34). Veblen's evolutionism is distinguished from Marx's on two grounds. Firstly, under Marx's theory, institutional change is determinate, whereas Veblen's institutional change is "uncertain in character and proceeds as chance variations"[17] and, "tending to no pre-determined goal"[18] and also of a discontinuous variation in habituations[19] Later, economic changes are further detailed as "chance phenomena, that is, they proceed mutationally"(Harris 1934, p. 59). Secondly, Marx's theory is consistent whereas Veblen's is not because there are shifts from occupational habituation to struggle for income as the force behind institutional change (Harris 1934, p. 77).

By institutional change, Harris implicitly refers to the evolution of institutions. This evolution is saltative in Harris' reconstruction and is non-Darwinian.[20] Under Mendelism and the mutation theory in particular, variations or mutations of evolutionary significance are immediately a new species. Thus natural selection is neither necessary nor sufficient. Harris does note that Veblen's usage of the principle of the struggle for existence is "in a cultural or moral sense, not a biological one".[21] (Harris 1934, p. 68). Since there is no distinction within the population between survivors and non-survivors — ie. no elimination — all variants or mutant characters are evolutionary significant.[22] Also, Harris' depiction of Veblen's occupational habituation as the driving force is in the nature of Lamarckian use-inheritance and so it is non-eliminative and further supports the equivalence of change to evolution.

[17](Harris 1934, p. 53).

[18](Harris 1934, p. 56).

[19](Harris 1934, p. 58).

[20]As stated elsewhere, there is evidence that institutional change is gradual, but Harris does not explain nor reconcile this.

[21]Biological natural selection applies to the lower forms of culture as noted by Harris.

[22]Harris does not recognize that this is sufficiently non-Darwinian so as to bring the Darwinian characterization into question (Harris 1934, p. 68).

To see how Harris derives a contradiction from Veblen's theory it is necessary to outline the basic structure of his characterization. The human material is seen as being endowed with two conflicting 'habits', industry and exploitation, which have arisen from a Darwinian process and correspond to the savage and barbarian stages of culture. The Darwinian process involves conditioning from the 'material environment' which contains both the institutions of the industrial and pecuniary occupations and where both exercise a occupational habituation. However, since a surplus exists during the modern stage, a struggle to exist is a struggle for income (Harris 1934, p. 69). Since 'sufficient' income is a conventional standard to which individuals have become habituated, change to the standard would occur from those individuals who feel their 'sufficient' income is threatened or who are jeopardized by changing economic conditions. Thus institutional change occurs due to the struggle to exist (ie. for income) and not due to occupation habituation and, thus, the contradiction.

Harris' resulting contradiction is a product of his conception, not of Veblen's theory. First, Harris conceives of industry and exploitation as 'basic' and conflicting habits, instead of noting that exploitation arises out of the industry. Savagery precedes barbarism. Thus, although there is a certain opposition or competition between these two habits in a later stage (ie. from barbarism on), there is a sense in which the habits can coexist because the conditions for the emergence of the latter are conditions compatible with the former. The transition is gradual and not revolutionary nor saltative. The opposition between them does not imply that there will be an intensification of the opposition. Thus, occupational habituation has never driven Veblen's model. Also, by not clearly identifying what the nature of the Darwinian struggle for existence is, Harris does not realize that the struggle for income is fundamentally different; that the opposing occupations arose from it by way of institutional differentiation; and that the consumption habit of the struggle for income is an elaboration of the division of labor (ie. occupational habit).

6.3.3 Edgell and Tilman

In Edgell and Tilman (1989), the Darwinian influence on Veblen is only one of many but it is one that figures significantly in their identification of the "main properties" of a "comprehensive assessment of Veblen's primary intellectual antecedents" (Edgell and Tilman 1989, p. 1021). These parameters, evolutionism and socialism, are the "two most pervasive influences on Veblen's thought" (Edgell and Tilman 1989, p. 1004). The impact of evolutionism is primarily on Veblen's theoretical orientation while socialism impacts on his critical orientation. Evolutionism refers "not to the social Darwinism of Spencer that Veblen found persuasive, but rather the biological evolutionism of Darwin himself" (Edgell and Tilman 1989, p. 1005). Darwinian theory, for the purpose of social theory, is defined in the paper by two premises and a conclusion: (1) species vary enormously; (2) species tend to reproduce on a scale that precludes the survival of all but the fittest; and (3) in the ensuing struggle for existence, the variations that are best adapted will survive. Also they note that the result of this process is adaptive. Since evolution has no purpose and no distinction in the sense that it does not lead from 'lower' to 'higher' things" (Edgell and Tilman 1989, p. 1005).

Veblen is considered to have been a "Darwinian par excellence" based on his use of Darwinian theory in which "he effectively substituted the concept, 'institution,' for Darwin's reference to species" (Edgell and Tilman 1989, p. 1005). The Darwinian influence also appears in Veblen through his specification of the nature of modern, evolutionary theories where change is conceived to be consecutive, cumulative, self-continuing and self-propagating, and to have no final term (Edgell and Tilman 1989, pp. 1007–1008). However, Edgell and Tilman note that Lamarckian influences are present and that "the Lamarckian doctrine of the inheritance of acquired characters is possibly a more effective analogy to use in understanding the internal dynamics of institutional change than is the theory of natural selection" (Edgell and Tilman 1989, p. 101). The Darwinian character is maintained by specifying that institutional

genesis, development and transmission is subject to the Lamarckian process while institutional prosperity and stagnation are subject to natural selection (Edgell and Tilman 1989, p. 1010).

The question of the role of the Lamarckian process is indicative of the problem that arises when institutions are taken as an equivalent to species. The absence of any sustained discussion of the eliminative aspect of natural selection in Veblen makes it difficult to defend Veblen's Darwinism when evidence of other processes involving institutions are presented. In general, there is little but some evidence of eliminative natural selection and even less where institutions as species are concerned. To specify the role of natural selection when it concerns institutions requires an organic definition of it but then it becomes a difficult term to analyze as distinct from growth and development and thus a function of the Lamarckian process. This suggests that the distinction is somewhat artificial. In either case, Edgell and Tilman seem to have ignored the fact that an economic surplus is required in order for the growth and emergence of institutions to occur. This is a process of natural selection but it is the natural selection process operating on the human material as the 'species' and not institutions. Another result follows from the exclusion of the human material. In the absence of a concern for the human material, the distinction between the mental or intellectual and the physiological is lost. Thus, when the process of selective adaptation is examined it often is mistaken for Lamarckian use-inheritance. Habits found under selective adaptation are not transmitted and thus the conception is not Lamarckian.

6.4 Summary

The first part of the chapter presented the results of an investigation of Veblen's work for elements from evolutionary biology. References and terms from many different areas appear in Veblen. As for the use of evolutionary ideas, Darwinian elements in terms of processes and patterns interpreted in the orthodox sense, Veblen use is

fragmentary and superficial. Thus the claim of the existence of explicitly Darwinian elements in Veblen is misleading. Alternatively construed in the developmental sense, the Darwinian characterization of Veblen's work appears supportable. Nevertheless, when examined for sustained use, Veblen's concern for process and adoption of the Mendelian perspective counters such claims.

The second section of the chapter examines certain commentators of Veblen's Darwinian character. Common to the three positions presented is the view that the basis of Veblen's Darwinian or evolutionary character is derived from the biological elements. Closer examination of these positions reveals that Veblen's use of natural selection is not noted as restricted to the earlier portions of the life-history nor is Veblen's case of suspended natural selection in the modern era. This suggest that Veblen's notion cumulative causation and its self-propagating nature has not been sufficiently analyzed to show how the operation of process begets changes to the process itself. Less abstractly and less methodologically, it suggests a certain naivete in the interpretation of Veblen's material forces, the material exigencies. Since the role of economic surplus is not recognized as a factor determining the level of selective pressure, material forces refer only to mechanical forces. Also revealed is the general lack of consideration of the relationships of institutions to each other such as those in the social structure of consensualized habits. Inattention to the scheme of life and the cultural scheme has led to overly optimistic view of the parallels between institutions as species or as genes, and the applicability and extent of the respective parallel processes to institutions. In the case of the gene, the suggestion that Veblen's parallel natural selection process is in fact the genetical theory of natural selection is strongly anachronistic.

Chapter 7

Summary and Conclusion

The central question motivating the research undertaken in the thesis is the nature and extent of the Darwinism in Thorstein Veblen's theory. Current assessments claim a significant similarity between his work and Darwin's, particularly in Veblen's use of and reliance on the process of natural selection and the ontological parallels between 'species' and institutions.

The basic finding of the research undertaken is that the Darwinian or evolutionary character of Veblen's theory pertains to a set of methodological standards rather than specific parallels to Darwin's theory of natural selection and the species concept. That the Darwinian nature is methodological or metaphysical is suggested by Veblen himself. Examination of the perceived parallels to Darwinian theory show that the parallels are not well sustained. Furthermore, Veblen's liberal use of other biological and Social Darwinian elements with equally superficial application suggests that Veblen was more extensive in scope than depth in his borrowings from biological theories and perhaps less concerned with specific mechanisms as they may have been beside the point.

Chapter one of the thesis introduces the problem of the Darwinian characterization of Veblen's work. This problem commonly manifests itself in attempts to neutralize the pervasive implementation of the Lamarckian use-inheritance mechanisms in Veblen which implicitly promotes natural selection processes as the fundamental Veblenian process of institutional change. The grounds for dismissing or downplaying their role in Veblen's work are founded on Darwin's own use of the same mechanism.

Chapter two introduces some basic ideas of evolutionary biology and presents an outline of the orthodox history of Darwinian evolutionary theory. The purpose of the

review of the basic ideas is to highlight and sharpen the key distinction relevant to the argument presented in the thesis; the purpose of the orthodox history is to show why and how Darwin's contribution to evolutionary biology came to be taken as synonymous with it and why his theory of natural selection became the most significant if not the only aspect of his work. These same reasons can then be vicariously argued against the significance of Veblen's use of the Lamarckian process.

Chapter three provides additional background material on evolutionary ideas drawn from different sources, namely social Darwinism. A review of the attempts to define social Darwinism is presented to elucidate the central questions that engaged scientists who wanted to apply the evolutionary principles into the social sphere. On the basis of the questions asked, evidence for and against Veblen's use of these evolutionary ideas can be assessed. Also presented in the chapter are surveys of the work of two prominent social Darwinists, Herbert Spencer and William Graham Sumner. The survey of their work provides substance to any link drawn between social Darwinism and Veblen.

Chapter four introduces an alternative history of evolutionary theory, one that approaches the issue of the distinction between Darwin's natural selection process and Lamarck's use-inheritance in a significantly different manner. Rejecting the inductive approach to history and adopting a more pragmatic approach to the history science and a theory of scientific knowledge far less hostile to the notion of preconceived analytical and interpretive frameworks, the basic result is that the joint use of natural selection and use-inheritance is far less incompatible and conflicting than is traditionally portrayed because of the developmentalist perspective and the growth analogy. Moreover, developmentalism and the growth analogy placed emphasis on the morphological aspects of evolutionary phenomena and less on the question of process. Darwin's work is shown to be significantly influenced by the developmentalist concerns. Thus the emphasis on the distinction between the two processes as a means of distinguishing Darwinian theory from others is misguided. The significant

distinction and contrast is show to be between developmentalism and Mendelism (or hereditarian) thought.

Chapter five begins the examination of Veblen's work. An investigation of Veblen's own use of the term 'Darwinian' reveals its methodological content as a duality between two types of causal relations, the natural law type and the efficient cause type. Simultaneous with this duality are other interrelated dualities. Within this network, Veblen gives one wider scope and its effects are seen to control the others. This is the duality of the 'final' to the 'provisional' or the 'definitive' to the 'contingent'. Expressed in the context of a general causal relation, it is the duality of the 'ending' to 'transient' terms of the temporal sequence of events comprising the causal relation. Darwinism or more correctly post-Darwinian science gives marked emphasis to the transient terms, which are provisional and contingent. Veblen's own work, the theory of instincts and the theory of social institutions, displays these methodological distinctions and dualities. In each case, a model with emphasis on definitive categories and a model with emphasis on transient terms can be identified. Using Veblen's 'stylized' life-history of Western humankind, a complete model of Veblen's theory can be constructed in the transient, process-orientied sense. The underlying ontological nature of the transient terms are habits. Habits, in this general sense, form both the exogenous and endogenous factors as well as the means through which causes take their effect in the ongoing process of life; as habits formed and elaborated from an individual's actions, as legitimized habits of the cultural scheme selectively coercing an individual's habitual behavior, and as the consensualized structure or schemes of habits that reflects the underlying divisions in the total population and which as a structure is at any one point in time is both differentiated and integrated. Habits and their structure are the transient terms and thus the 'transient' model of Veblen's overall social theory may be simply referred to as the theory of habits inclusive of all their various manifestation, with a central process of habituation.

Chapter six begins an investigation of Veblen's use of Darwinian and evolutionary

ideas at a theoretical level. Veblen's use is shown to be wide and but not sustained in any one case. As for the Darwinian characterization of Veblen's theory on the basis of parallels with Darwin's theory of natural selection, this is unnecessarily narrow and misleading. Firstly, Veblen's use of natural selection processes is restricted to examples of the 'primordial' origins of certain instincts. Secondly, the interaction in the 'schemes' of habits lacks the central operative mechanism of elimination in Darwin's process. Thirdly, this interaction takes place under the conditions of economic surplus where the influence of material exigencies are muted, but surplus arises only when efficiencies are gained under the action of these material exigencies. This reflexive effect is absent from Darwin's process. Overall, Veblen's references to the biological evolutionary sciences are broad and his usage of theoretical concepts insufficiently concentrated and sustained to serve as a basis of characterization. However, it is argued that Veblen's cumulative causation can be characterized as 'Darwinian' in a methodological sense. Certain commentators on Veblen's Darwinian character who defend the traditional view are presented and examined. In general, their conclusion are shown to rely excessively on the process of natural selection as a criterion and without attention to its central eliminative character and it absence in Veblen's work. Links between social Darwinism and Veblen are denied by the commentators as well, and appear to be related to the standard but false distinction of the role of the Lamarckian process.

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