

**FASHIONS IN SCIENCE**

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### **ABSTRACT**

This is a companion paper to “Stars and fashions in science” (Green 2001) which concentrated on stars and the star system in science. My purpose is to understand what is meant by the term “fashion” and the nature of the fashion process. Much work on fashion has focused on fashions in clothing in general and in women’s clothing in particular. I discuss some of this work, but my interest is in the working of the fashion process in general. I rely heavily on the book, “Fashions in science,” (Sperber 1990) and the work that it discusses and criticizes. Sperber’s book is too critical. It tends to dismiss the work that it criticizes. I am more interested in ideas than facts, and I do not want to reject interesting and potentially useful ideas because they have not been established as correct. I describe some of the distinctions that have been made concerning fashions, for example between fashions and fads, or styles, or innovations. I also point to some of the social conditions and human forces that may influence fashions in science.

## INTRODUCTION

In 1997 Peter A. Lawrence and Michael Locke wrote a Commentary piece in *Nature* that was an appreciation of the Cambridge insect physiologist, Vincent Wigglesworth. Lawrence and Locke mentioned that Wigglesworth worked before the rise of the “star system” in science, and that he was not motivated by the “narrow preoccupations of fashion.” I was struck by the suggestion that there is a star system in science and that science is influenced by fashion. I have frequently noticed reviewers criticizing work for failing to use some method or to mention some recent work, which the reviewers do not bother to explain. It is not useful for readers who want to understand a subject or for authors whose work is being criticized to be told that there is something wrong but the reviewer cannot be bothered to specify what. The easy dismissal of work for being out-of-date is an example of the working of fashion in science.

I am interested in optimal foraging theory, which was very fashionable for a time (roughly from the mid-70s to the mid-80s), and then fell from fashion. The two most prominent proponents of behavioral ecology, of which optimal foraging theory was an important part, mention the fall from fashion of optimal foraging theory (Krebs and Davies 1991), but they do so facetiously. Since fashion seems to have played such an important role in my specialty, I decided to read more about the subject. This paper is a summary of my reading about fashions in general, and fashions in science in particular. Since I cannot improve upon the original authors I quote them extensively.

I do not know of any broad, general treatment of the role of fashion in the natural sciences, but Sperber (1990) discusses fashions in the social sciences. I rely on two

sources of ideas about fashions. Encyclopedias, especially *The Encyclopaedia of the Social Sciences* (1931), offer definitions and distinctions that are useful in thinking about scientific fashions. Encyclopedia articles also point to references to works on fashion. My other source of information is Sperber's book, *Fashions in Science*, and the work that he cites and criticizes.

First I will discuss the definitions of fashion and some related ideas in encyclopedias, then I will discuss some books and papers on fashions. There is a tendency for the earliest work to concentrate on fashions in dress, but later work extends the idea to apply to business, medicine, religion and science.

## **DEFINITIONS AND DISTINCTIONS**

Some words are used more or less interchangeably with "fashion," but when the words have the same denotation as "fashion," they have a different connotation. For example, we might say that a particular type of dress is "in fashion" or "in style." If one distinguishes between the denotation of "fashion" and "style," then "style" refers to something more permanent and suggests freedom of choice. "Fashion" is more temporary and suggests an element of compulsion. If the words are used as synonyms the choice of word may imply more or less approval. We exercise our taste in choosing a certain style while our social rivals feel compelled to join the fashion-following herd. Similarly, "fashion" and "fad" may be used as synonyms. For example, Meyersohn and Katz (1957) use the word "fads" in the same way that most people use "fashions," and they use the two interchangeably. One may use the words "fashions" and "fads" to

distinguish two different kinds of phenomena: fashions last longer and are more widespread, fads have no place in long-term cultural changes and they are sometimes bizarre. But if “fashion” and “fad” are used to refer to the same thing, the term “fad” suggests disapproval--someone has made a frivolous choice.

I am not particularly interested in how one uses the words to imply approval or disapproval. I am interested in the phenomena to which the words refer. In this section I will discuss the way the idea of fashion and some related ideas are treated in encyclopedia articles. To some extent these articles are about how words are used, but the way words are used says something about the world to which they refer. I am particularly interested in aspects of the fashion process that might operate in science, especially natural science. Scientists do not like the idea that fashions apply to their work and they do not encourage the study of fashions in science. It may be possible to begin to understand the play of fashions in science (where the study of fashion is discouraged) by first studying the role of fashion in areas in which its existence and importance is acknowledged and its study is not treated with hostility.

#### Sapir's (1931) treatment of “fashion” and “custom”

In his 1931 encyclopedia article on “fashion,” Edward Sapir tried to clarify the meaning of the term fashion by pointing out how it differs in connotation from words with similar meaning, including “taste,” “fads,” “custom,” and “innovation.”

A particular *fashion* differs from a given *taste* in suggesting some measure of compulsion on the part of the group as contrasted with individual choice from among a number of possibilities. (p. 139)

The term *fashion* may carry with it a tone of approval or disapproval. It is a fairly objective term whose emotional qualities depend on a context. A moralist may decry a certain type of behavior as a mere fashion but the ordinary person will not be displeased if he is accused of being in the fashion. It is different with *fads*, which are objectively similar to *fashions* but differ from them in being more personal in their application and in connoting a more or less definite social disapproval. (p. 139)

Just as the weakness of fashion leads to fads, so its strength comes from custom. *Customs* differ from *fashions* in being relatively permanent types of social behavior. . . . *Custom* is the element of permanence which makes changes in fashion possible. *Custom* marks the highroad of human interrelationships, while *fashion* may be looked upon as the endless departure from and return to the highroad. (p. 139)

It is not correct to think of fashion as merely a short lived innovation in custom, because many *innovations* in human history arise with the need for them and last as long as they are useful or convenient. If, for instance, there is a shortage of silk and it becomes customary to substitute cotton for silk in the manufacture of certain articles of dress in which silk has been the usual material, such an enforced change of material, however important economically or aesthetically, does not in itself constitute a true change of fashion. On the other hand, if cotton is substituted for silk out of free choice as a symbol perhaps of the simple life or because of a desire to see what novel effect can be produced in accepted types of dress with simpler materials, the change may be called one of *fashion*. (pp. 139-140)

Sapir went on to discuss fashion in terms of the reactions of individuals and social forces to which they must react. One might try to understand individual reaction in terms of psychology in general, but reactions vary from individual to individual and from class to class. Fashions may be of no importance at some times and in some cultures. Where fashions are important, they may change rapidly or slowly. Sapir tried to explain where and why fashions are important:

Whether fashion is felt as a sort of socially legitimized caprice or is merely a new and unintelligible form of social tyranny depends on the individual or class. It is probable that those most concerned with the setting and testing of fashions are the individuals who realize most keenly the problem of reconciling individual freedom with social conformity which is implicit in the very fact of fashion. It is perhaps not too much to say that most people are at least partly sensitive to this aspect of fashion and are secretly grateful for it. A large minority of people, however, are insensitive to the psychological complexity of fashion and submit to it to the extent that they do

merely because they realize that not to fall in with it would be to declare themselves members of a past generation of dull people who cannot keep up with their neighbors. (p. 140)

In custom bound cultures, such as are characteristic of the primitive world, there are slow non-reversible changes of style rather than the often reversible forms of fashion found in modern cultures. The emphasis in such societies is on the group and the sanctity of tradition rather than on individual expression, which tends to be entirely unconscious. (p. 141)

The typically modern acceleration of changes in fashion may be ascribed to the influence of the Renaissance, which awakened a desire for innovation and which powerfully extended for European society the total world of possible choices. During this period Italian culture came to be the arbiter of taste, to be followed by French culture, which may still be looked upon as the most powerful influence in the creation and distribution of fashions. But more important than the Renaissance in the history of fashion is the effect of the industrial revolution and the rise of the common people. The former increased the mechanical ease with which fashions could be diffused; the latter greatly increased the number of those willing and able to be fashionable. (pp. 141-142)

Modern fashion tends to spread to all classes of society. As fashion has always tended to be a symbol of membership in a particular social class and as human beings have always felt the urge to edge a little closer to a class considered superior to their own, there must always have been the tendency for fashion to be adopted by circles which had a lower status than the group setting the fashions. But on the whole such adoption of fashion from above tended to be discreet because of the great importance attached to the maintenance of social classes. What has happened in the modern world, regardless of the official forms of government which prevail in the different nations, is that the tone giving power which lies back of fashion has largely slipped away from the aristocracy of rank to the aristocracy of wealth. This means a psychological if not an economic leveling of classes because of the feeling that wealth is an accidental or accreted quality of an individual as contrasted with blood. (p. 142)

Human beings do not wish to be modest; they want to be as expressive—that is, as immodest—as fear allows; fashion helps them solve their paradoxical problem. . . . The individual in society is only rarely significantly expressive in his own right. For the vast majority of human beings the choice lies between unchanging custom and the legitimate caprice of custom, which is fashion. (p. 143)

Sapir concludes his article on “fashion” with the provocative sentence:

Functional irrelevance as contrasted with symbolic significance for the expressiveness of the ego is implicit in all fashion. (p. 144)

While Sapir defined the term fashion indirectly by distinguishing its meaning from that of other similar terms, he did offer an explicit definition of “custom” (italics are mine):

The word *custom* is used to apply to the totality of behavior patterns which are carried by tradition and lodged in the group, as contrasted with the more random personal activities of the individual. It is not properly applicable to those aspects of communal activity which are obviously determined by biological considerations. The habit of eating fried chicken is a custom, but the biologically determined habit of eating is not. (p. 658)

Sapir offers a number of other distinctions. For example:

A distinction can be made between customs of long tenure and customs of short tenure generally known as *fashions*. (p. 659)

Sapir offers an example:

The habit of wearing a hat is a *custom*, but the habit of wearing a particular style of hat is a *fashion*. (p. 659)

The term *custom* is used in a common sense sort of way. *Culture* is the technical term used by anthropologists. Often *custom* is used to refer to some else’s culture while *culture* refers to our own. However,

[w]hen applied to the behavior of one’s own group the term [culture] is usually limited to relatively unimportant and unformalized behavior patterns which lie between *individual habits* and *social institutions*. (p. 658)

The word *habit* is used to emphasize significant individualism, while *institution* is used to emphasize a “thoroughly rationalized and formalized collective intention.” Sapir gives an example: cigarette smoking is a custom, the trial of criminals in court is not.

Sapir also distinguishes *convention*, *tradition* and *mores*. *Convention* emphasizes the lack of inner necessity and implies some form of agreement that a mode of behavior is

acceptable. *Tradition* emphasizes the historical background of a custom. *Mores* applies to customs which connote feelings of right and wrong.

Customs may be formally or informally institutionalized as *law* or *ethics*. Sapir writes:

The formulation of customs in the sphere of the rights and duties of individuals in their manifold relations leads to law. It is not useful to use the term *law*, as is often vaguely done in dealing with primitive societies, unless the enforcement of customary activity be made explicit, being vested in particular individuals or bodies of individuals. (p. 661)

When custom has the psychological compulsion of law but is not controlled by society through the imposition of explicit penalties it may be called *ethics* or, more primitively, *mores*. (p. 661)

Beyond his definitions and distinctions, Sapir makes two points that I think are worth mentioning. One point is that following custom may provide a position of strength from which one can move to change society. Sapir writes:

Custom is generally referred to as a constraining force. The conflict of individual will and social compulsion is familiar, but even the most forceful and self-assertive individual needs to yield to custom at most points in order that he may gain leverage, as it were, for the imposition of his personal will on society, which cannot be conquered without the implicit capture of social consent. The freedom gained by the denial of custom is essentially a subjective freedom of escape rather than an effective freedom of conquest. (p. 661)

Sapir concludes by listing a number of reasons why the force of custom is weakening in the modern world:

If complicated forms of conscious manipulation of ideas and techniques which rule the modern world are excluded from the range of the term custom, the force of custom may be said to be gradually lessening. The factors which favor this weakening of custom are: the growing division of labor with its tendency to make society less and less homogeneous; the growing spirit of rationalism, in the light of which much of the justification of custom fades away; the growing tendency to break away from local tradition; and, finally, the greater store set by individuality. The ideal which is latent in the modern mind would seem to be to break up custom into the two poles of

individually determined habit on the one hand and of large scale institutional planning for the major enterprises of mankind on the other. (p. 662)

Blumer's (1968) encyclopedia article on fashion

Herbert G. Blumer (1968) wrote the article about "fashion" in the *International Encyclopedia of the Social Sciences*. Like Sapir (1931), Blumer offered no direct definition of fashion, but he claimed that its general nature is suggested by the contrasting phrases "in fashion" and "outmoded." Sapir and other early writers on fashion concentrated on fashions in dress, but Blumer had a broader view:

Although conspicuous in the area of dress, fashion operates in a wide assortment of fields. Among them are painting, music, drama, architecture, household decoration, entertainment, literature, medical practice, psychological and social science, and even such redoubtable areas as the physical sciences and mathematics. Any area of social life that is caught in continuing change is open to the intrusion of fashion. In contrast, fashion is scarcely to be found in settled societies, such as primitive tribes, peasant societies, or caste societies, which cling to what is established and has been sanctioned through long usage. (p. 342)

Blumer is also more interested in fashion as a process. He tries to describe when and where it is likely to occur, what its causes are and what function it plays in society.

Areas amenable to fashion are those that have been pulled into an orbit of continuing social change. The structuring of social life in such areas tilts away from reliance on established social forms and toward a receptiveness to novel ones that reflect new concerns and interests; thus, these areas are open to the recurrent presentation of perspective models of new social forms that differ from each other and from prevailing social forms. These models compete for adoption, and opportunity must exist for effective choice among them. Most significant in this selective process are prestigious personages who through their advocacy of a model give social endorsement or legitimacy to it. Means and resources must be available for the adoption of the favored models. (p. 342)

Blumer points out that there are two categories of explanation, psychological and sociological, for the cause of fashions, but each explanation is inadequate by itself.

Blumer lists six possible psychological explanations, including a particularly important one stated by Sapir (1931) that fashion is an effort to make the self more attractive. No matter what psychological explanation for individual susceptibility to fashion, the susceptibility will not be exercised unless the social conditions are appropriate. Blumer discusses Simmel's (1904/1957) sociological explanation for fashion, that the elite class tries to set itself apart from other classes, but he points out that this explanation is not sufficient to explain the fact that the elite do not control the fashion process.

Blumer (1968) provides an example of how the fashion process works, based on his study of the workings of Parisian fashion houses. Blumer (1968) specifies two major stages, one of *innovation* and the other of *selection*. The whole process has several parts. First there is innovation, perhaps the designs of several new costumes by fashion designers. Then one or several designs are selected. In the case of Parisian fashions, buyers select a few of many designs, but only some of these will be accepted by the buying public. Acceptance by the public may also have stages and these have been analyzed as well. For example, fashion critics and those who actually adopt the fashion may be distinguished. Blumer (1968) does not concern himself with such distinctions, but he does point out that the acceptance of a model depends on current trends. Fashions exist in an historical continuum and they are modern. That is, they generally represent small changes from past fashions, and the change tends to be in the same direction as other recent changes. Fashions are also sensitive to other changes occurring in the society.

The social function of fashion is to permit systematic, controlled change. Blumer points out that fashion introduces uniformity by choosing which model will be adopted, it provides an orderly march into the future, and it shapes collective taste. Blumer writes:

Taste has a trifold character; it is like an appetite in seeking positive satisfaction; it operates as a sensitive selector, giving a basis for acceptance or rejection; and it is a formative agent, guiding the development of lines of action and shaping objects to meet its demands. (p. 344)

The fashion process involves both a formation and an expression of collective tastes in the given area of fashion. . . . Through models and proposals, fashion innovators sketch possible lines along which the incipient taste may gain objective expression and take definite form. Collective taste is an active force in the ensuing process of selection, setting limits and providing guidance. (p. 344)

Blumer concluded by distinguishing fads from fashions. Fads differ because they (1) have no line of historical continuity, (2) they do not require the endorsement of a qualified prestige group, (3) they are ephemeral and (4) they follow a boom-and-bust pattern.

#### Schapiro (1931) on "taste"

Taste and style are concepts related to fashion, but their use implies a choice or the availability of choices. Meyer Schapiro (1931) wrote the article on "taste" in the *Encyclopaedia of the Social Sciences*. Schapiro pointed out that taste is the "choosing" sense, and that it is no accident that the term for discrimination in art, dress and conduct is the name for one of the senses. The term taste is used both for appetite and for discrimination. For example, we distinguish a taste *for* poetry and a taste *in* poetry.

The concept of taste does not apply if everyone agrees (if everyone enjoys the same poetry or art, for example). Taste is not used to refer to the choices of peasants or

artisans, no matter how subtle or exact. When the word taste is used to mean discrimination it refers to good taste, that is, the cultivated taste of the “leisure class.”

Schapiro writes:

Taste is identified with good taste and good taste with the taste of the upper class, just as “high society” and *haut monde* become society and the world. (p. 523)

In so far as the dominant class believes that its conduct and interests do not issue from exterior compulsions, like the conduct of the lower classes, but from considerations of the aesthetic pleasure of free individuals, the concept of good taste is extended to the larger activity of the class. Even virtue and religion may then be in good or bad taste, and political ideas may be evaluated in the same spirit. Good taste becomes the aesthetics of conduct, the aptitude for manners and politeness, the knowledge of the formal practices, the arts and choices most favorable to the enjoyment of the conditions of upper class life. (p. 523)

Good taste is fixed through education and life in a socially closed and fairly homogeneous group. Those who enter from without cannot have the complete experience which makes certain practices possible without thought. They lack the directness of taste which is common to the closed circle. Requiring long cultivation, the absence of taste betrays the parvenu, and requiring wealth and leisure it exposes the economically declassed. It is accessible only to those of a certain standard of living and upbringing, hardly to the poor and the provincial. Hence good taste becomes a canon of exclusiveness and lapses from it, whether of individuals or of nations, are identified with social or cultural inferiority. (pp. 523-524)

[W]hen the tastes of the upper class are appropriated by the lower, these tastes are considered vulgarized and the upper class acquires new tastes which are inaccessible to the lower and express a superior wealth, leisure and cultivation. (p. 524)

However, the upper class does not always discourage the adoption of their tastes by the more numerous lower classes

because the wealth of the upper class depends on manufacturing and commercial enterprises, which grow with the extension of various tastes among the lower classes. The importers of tea and silk cannot frown upon the consumption of tea and silk by a lower class but will reserve for themselves choicer and less accessible goods. In a mobile society the tastes of the rich exercise a deep attraction of the lower classes; and this imitation, where it is connected with the acceptance of the cultural superiority of the rich, reinforces a conservative dependence on the latter and loyalty to the existing structure of society. (p. 524)

[G]ood taste is essentially conservative, for while it is poor taste to be behind the times, it is still worse to be ahead. (p. 524)

Taste is not only influenced by the society and the choices that it offers, but tastes have an important economic influence on societies.

Although taste is itself dependent on the productivity of society and the economic system, it has also an important place in the economy. The development of varied and refined appetites promotes the production of luxuries, which in turn entails the extension of trade, colonialism, new home industries and technological progress. This is illustrated by the part played in modern economy by the production and distribution of tea, coffee, tobacco, alcoholic drinks, silks, perfumes, automobiles, objects of art and by the rapid changes of fashion in clothing. (p: 525)

#### Gombrich (1968) on “style”

E. H. Gombrich (1968) wrote the article about “style” in the *International Encyclopedia of the Social Sciences*. He began with a definition: “Style is any distinctive, and therefore recognizable, way in which an act is performed or an artifact made or ought to be performed and made.” Style may refer to a number of aspects of an object or act. For example, a style may be an expression of a psychological state—“a humorous style”—or it may involve a sensory description—“a smooth style”—or it may refer to a particular mode of performance—“a jazzy style”—or it may refer to historic categories of style—“the Baroque style.”

Gombrich points out that there is no style without choice.

The laborer who puts on his overalls or the builder who erects a bicycle shed is not aware of any act of choice, and although the outside observer may realize that there are alternative forms of working outfits or sheds, their characterization as “styles” may invite psychological interpretations that can lead him astray. (p. 353)

Gombrich contrasts “style” and “fashion:”

If the term “style” is thus used descriptively for alternative ways of doing things, the term “fashion” can be reserved for the fluctuating preferences which carry social prestige. (p. 353)

Moreover, since considerations of prestige sometimes carry with them the suspicion of insincerity and snobbery, the same movement may be described as a fashion by its critics and as a style by its well-wishers. (pp. 353-354)

Gombrich discusses the history of the uses of the word style. The Greek and Roman teachers of rhetoric characterized various categories of style. They were interested in defining the appropriate style for different occasions. A goal was the development of a perfect style. Later when the term style was applied to art history it was used to refer to various period styles.

Gombrich also has a section of “technology and fashion.” He points out that two main forces influence changes in styles: technological improvements and social rivalry. Objects such as cathedrals had their styles influenced by a desire to outdo rivals on the one hand and the limitations and possibilities of changing materials and techniques on the other hand.

One of the most interesting ideas in Gombrich’s article is his reference to the achievement of a main purpose of art—convincing illustration—in fourth-century Greece and sixteenth-century Italy. Gombrich mentions this in the context of the evolutionary theory of art history, that there is a primitive or archaic period in which the artistic means are not sufficient to meet the ends. Then there is a classic period in which the means can realize the ends. Finally there is a corrupt period in which the means are excessive to the ends that they should achieve. [For a discussion of more details about evolutionary theories of art history, Gombrich refers to the essay by Schapiro (1953).]

The interesting idea is that while one might look at part of art history as a movement toward a perfect style, the development does not stop with perfection but adds to the style and moves away from perfection. I wonder whether science works in a similar way, developing an area until it is nearly perfect and then moving on to something else.

Sperber's (1990) book, *Fashions in Science*

In 1990 Irwin Sperber published his book, *Fashions in Science: Opinion Leaders and Collective Behavior in the Social Sciences*. The book was a revised and expanded version of his thesis, written at Berkeley in the 1970s. The book does include a discussion of a paper presented by Jeffrey Alexander in the 1980s, but with that exception the book concentrates exclusively on work done earlier, the latest being books published in 1972 and 1973. Only one work listed in the Bibliography is later than 1974, that being a paper by Sperber himself.

Sperber's book is useful to me for several reasons. It addresses the question of fashion quite broadly and applies the idea to science, although it concentrates on social science, particularly sociology. It points out and criticizes some good early literature. I do not know of any recent literature on the idea of fashion applied to science other than articles that refer to Sperber's book. The book takes a critical attitude toward fashion, especially fashion in science.

Sperber (1990) begins by defining the "fashion process":

The fashion process is a form of collective behavior marked by a series of normative preoccupations: keeping in step with the times, with latest developments; following the example of prestigious opinion leaders who "keep their ears to the

ground” and articulate the shared and implicit sentiments of the public; admiring proposals for adoption when they are in good taste and new, discarding them when they are in bad taste and old; dismissing the weight of tradition while rediscovering and repackaging old proposals as though they were unprecedented, exciting, and modern; ignoring or downgrading explicit criteria by which competing proposals can be evaluated. The identity and well-being of opinion leaders, participants, and groups in modern society are often profoundly affected by the degree to which they are deemed to be in step with the latest developments, in tune with modernity itself.

Sperber’s book consists of detailed criticism of seven works by social scientists concerned with fashion, or with issues that can be thought of in terms of fashion. These works are: Simmel (1904/1957), Kroeber (1919), Sorokin (1956), Kuhn (1966), Friedrich (1972), Merton (1973) and an unpublished paper by Jeffrey Alexander, “General Theory in the Postpositivist Mode.” The essence of the criticism of all these works is quite similar and is clearly summarized in the last chapter of Sperber’s book: despite the fact that all the work considered involves fashion, the authors themselves were influenced by fashion and they seemed quite unaware of this. The authors seemed unaware that a fashion process was influencing their work just as it influenced the phenomena they were studying. I do not like Sperber’s criticism as much as I like the work that he criticizes.

It is stimulating to read criticism of work and ideas that one has thought about. I find it natural myself to criticize what I read, so when I read criticism by others I compare it with my own. For example, Robert K. Merton writes very well and his work on sociology of science is very pleasant to read. His norms of science are very pretty indeed, even if they are only attractive fictions. His ideas about how science works, for example how scientists are rewarded with prestige, and how prestige tends to concentrate on a few, are also very attractive, but he is unable to finish the ideas convincingly as he might be

able to do if he were a natural scientist and could conduct convincing, controlled experiments. His material is not as convincing as his ideas are attractive, but he does as well as he can and better than anyone else could do with the same material. Sperber criticizes Merton as an establishment figure, which he was, but I doubt that Merton was an agent of the establishment, either being chosen for favor because his ideas were useful in buttressing the establishment worldview or having chosen his ideas because they would be acceptable to the powers that be. Sperber's criticisms made me more sympathetic to Merton.

On the other hand, when Sperber was criticized by Stephen Turner (1992) and by Harold Orlans (1993), even though some of their criticism was justified, I felt more sympathetic to him. They did make it clearer to me that the purpose of Sperber's book was not just to develop the idea of the fashion process and apply it to (social) science—which I wanted to see—but also to criticize social science in general. His critics are right that Sperber does not show how the fashion process works, in natural science, or in social science, for that matter. I also share the critics' distaste for some of the political rhetoric that he uses. But he did try to understand the subject that I am thinking about, and his critics do not do better, nor do they say who else has done better. Turner criticizes Sperber as trying to explain away the failure of radical sociology, and Sperber (1992) responds that Turner is just defending the Post-Modern view of social science. I would say that everyone has motives, and that while it may be revealing to point out the motives of one's rivals, the fact that they have motives is not enough to invalidate their ideas. I am interested in fashions in science because the area of greatest interest to me has fallen

from fashion. This makes me unhappy with fashion in science, and it may even make it difficult for me to see clearly. But if I had not had my own experience with fashion in science I would not be interested in the problem.

Only two of the seven works considered by Sperber (Simmel 1904/1957; Kroeber 1919) are about fashion itself, the others are about science in general (Kuhn 1966), or sociology in particular. The other works touch on fashion, or on issues that could be considered in terms of fashion, but they are not concerned mainly with the nature of operation of fashion itself. I will discuss four pieces of work on fashion. Three of these were mentioned by Sperber, but only one was a focus of his attention. I will discuss Simmel's (1904/1957) classic article on "fashion," the 1969 article by Blumer, which seems more than any other the basis of Sperber's book, and Chapter 7 of Thorstein Veblen's (1899) book, *The Theory of the Leisure Class*. The one work not mentioned by Sperber, but which I will discuss, is the article, "Notes on a natural history of fads," by Meyersohn and Katz (1957).

#### Veblen's (1899) treatment of dress as conspicuous consumption

Thorstein Veblen (1899, Chapter VII) offered an explanation of the operation of fashion in his treatment of dress as conspicuous consumption in his chapter titled: "Dress as an expression of the pecuniary culture." Veblen chose dress as the most visible form of conspicuous consumption. He pointed out that most of the cost of clothes is spent for the sake of appearance:

No one finds difficulty in assenting to the commonplace that the greater part of the expenditure incurred by all classes for apparel is incurred for the sake of a respectable appearance rather than for the protection of the person. (pp. 126-127)

However, conspicuous consumption is not the direct cause of the mode of dress:

This spiritual need of dress is not wholly, nor even chiefly, a naïve propensity for display of expenditure. The law of conspicuous waste guides consumption in apparel, as in other things, chiefly at the second remove, by shaping the canons of taste and decency. In the common run of cases the conscious motive of the wearer or purchaser of conspicuously wasteful apparel is the need of conforming to established usage, and of living up to the accredited standard of taste and reputability. (p. 126)

Inexpensive clothing is distasteful to us:

Without reflection or analysis, we feel that what is inexpensive [is] unworthy. “A cheap coat makes a cheap man.” “Cheap and nasty” is recognized to hold true in dress with even less mitigation than in other lines of consumption. On the ground both of taste and of serviceability, an inexpensive article of apparel is held to be inferior, under the maxim “cheap and nasty.” We find things beautiful, as well as serviceable, somewhat in proportion as they are costly. (p. 126)

Expense is not the only virtue in dress:

If, in addition to showing that the wearer can afford to consume freely and uneconomically, it can also be shown in the same stroke that he or she is not under the necessity of earning a livelihood, the evidence of social worth is enhanced in a very considerable degree. (p. 127)

Much of the charm that invests the patent-leather shoe, the stainless linen, the lustrous cylindrical hat, and the walking-stick, which so greatly enhance the native dignity of a gentleman, comes of their pointedly suggesting that the wearer cannot when so attired bear a hand in any employment that is directly and immediately of any human use. (p. 128)

Dress for women can go even further than simply showing that the wearer is not about to work. It can inconvenience or incapacitate her. For example,

The substantial reason for our tenacious attachment to the skirt is just this: it is expensive and it hampers the wearer at every turn and incapacitates her for all useful exertion. The like is true of the feminine custom of wearing the hair excessively long. (p. 128)

Sometimes dress even injures the woman:

The corset is, in economic theory, substantially a mutilation, undergone for the purpose of lowering the subject's vitality and rendering her permanently and obviously unfit for work. (pp. 128-129)

Veblen points out that dress has three functions as an indicator of status. First, it demonstrates conspicuous waste. Second, as a corollary, it demonstrates conspicuous leisure. Third, it must be up to date. In short, "[d]ress must not only be conspicuously expensive and inconvenient; it must at the same time be up to date." (p. 129) This third function is where fashion comes in. Veblen claims, "No explanation at all satisfactory has hitherto been offered of the phenomenon of changing fashions." (p. 129) Veblen considers two factors that are relevant to the operation of fashion, but he rejects both as explanations of why fashions have to change. The first explanation is that changing fashion adds to cost:

Obviously, if each garment is permitted to serve for but a brief term, and if none of last season's apparel is carried over and made further use of during the present season, the wasteful expenditure on dress is greatly increased. This is good as far as it goes, but it is negative only. Pretty much all that this consideration warrants us in saying is that the norm of conspicuous waste exercises a controlling surveillance in all matters of dress, so that any change in the fashions must conform to the requirement of wastefulness; it leaves unanswered the question as to the motive for making and accepting a change in the prevailing styles, and it also fails to explain why conformity to a given style at a given time is so imperatively necessary as we know it to be. (pp. 129-130)

Then Veblen considers another function of fashion:

For a creative principle, capable of serving as motive to invention and innovation in fashions, we shall have to go back to the primitive, non-economic motive with which apparel originated,—the motive of adornment. Without going into an extended discussion of how and why this motive asserts itself under the guidance of the law of expensiveness, it may be stated broadly that each successive innovation in the fashions

is an effort to reach some form of display which shall be more acceptable to our sense of form and colour or of effectiveness, than that which it displaces. (p. 130)

The innovation must not only be more beautiful, or perhaps oftener less offensive, than that which it displaces, but it must also come up to the accepted standard of expensiveness. (p. 130)

It would seem at first sight that the result of such an unremitting struggle to attain the beautiful in dress should be a gradual approach to artistic perfection. We might naturally expect that the fashions should show a well-marked trend in the direction of some one or more types of apparel eminently becoming to the human form; and we might even feel that we have substantial ground for hope that to-day, after all the ingenuity and effort which have been spent on dress these many years, the fashions should have achieved a relative perfection and a relative stability, closely approximating to a permanently tenable artistic ideal. But such is not the case. (p. 130)

After concluding that the styles of two thousand years ago were clearly more becoming than those of today (Veblen 1899) went on to reject the use of adornment as a motive to explain fashion:

The explanation of the fashions just offered, then, does not fully explain and we shall have to look farther. It is well known that certain relatively stable styles and types of costume have been worked out in various parts of the world; as, for instance, among the Japanese, Chinese, and other Oriental nations; likewise among the Greeks, Romans, and other Eastern peoples of antiquity; so also, in later times, among the peasants of nearly every country of Europe. These national or popular costumes are in most cases adjudged by competent critics to be more becoming, more artistic, than the fluctuating styles of modern civilized apparel. (p. 131)

[These costumes] have in every case been worked out by peoples or classes which are poorer than we, and especially they belong in countries and localities and times where the population, or at least the class to which the costume in question belongs, is relatively homogeneous, stable, and immobile. That is to say, stable costumes which well bear the test of time and perspective are worked out under circumstances where the norm of conspicuous waste asserts itself less imperatively than it does in the large modern civilized cities, whose relatively mobile, wealthy population to-day sets the pace in matters of fashion. The countries and classes which have in this way worked out stable and artistic costumes have been so placed that the pecuniary emulation among them has taken the direction of a competition in conspicuous leisure rather than in conspicuous consumption of goods. (p. 131)

[I]t will hold true in a general way that fashions are least stable and least becoming in those communities where the principle of a conspicuous waste of goods asserts itself most imperatively, as among ourselves. All this points to an antagonism between expensiveness and artistic apparel. In point of practical fact, the norm of conspicuous waste is incompatible with the requirement that dress should be beautiful or becoming. And this antagonism offers an explanation of that restless change in fashion which neither the canon of expensiveness nor that of beauty alone can account for. (pp. 131-132)

Veblen goes on:

The standard of reputability requires that dress should show wasteful expenditure; but all wastefulness is offensive to native taste. (p. 132)

Even in its freest flights, fashion rarely if ever gets away from a simulation of some ostensible use. The ostensible usefulness of the fashionable details of dress, however, is always so transparent a make-believe, and their substantial futility presently forces itself so badly upon our attention as to become unbearable, and then we take refuge in a new style. But the new style must conform to the requirement of reputable wastefulness and futility. Its futility presently becomes as odious as that of its predecessor; and the only remedy which the law of taste allows us is to seek relief in some new construction, equally futile and equally untenable. Hence the essential ugliness and the unceasing change of fashionable attire. (p. 132)

Veblen claims that it is the duty of women of the leisure class to demonstrate their economic dependence on their men.

To apply this generalization to women's dress, and put the matter in concrete terms: the high heel, the skirt, the impracticable bonnet, the corset, and the general disregard of the wearer's comfort which is an obvious feature of all civilized women's apparel, and so many items of evidence to the effect that in the modern civilized scheme of life the woman is still, in theory, the economic dependent of the man—that, perhaps in a highly idealized sense, she still is the man's chattel. The homely reason for all this conspicuous leisure and attire on the part of women lies in the fact that they are servants to whom, in the differentiation of economic functions, has been delegated the office of putting in evidence their master's ability to pay. (pp. 135-136)

As the size of the leisure class has grown, methods of indicating status have become more subtle. Veblen concludes his chapter:

Since the wealthy leisure class has grown so large, or the contact of the leisure-class individual with members of his own class has grown so wide, as to constitute a human environment sufficient for the honorific purpose, there arises a tendency to exclude the

baser elements of the population from the scheme even as spectators whose applause or mortification should be sought. The result of all this is a refinement of methods, a resort to subtler contrivances, and a spiritualisation of the scheme of symbolism in dress. And as this upper leisure class sets the pace in all matters of decency, the result for the rest of society also is a gradual amelioration of the scheme of dress. As the community advances in wealth and culture, the ability to pay is put in evidence by means which require a progressively nicer discrimination in the beholder. This nicer discrimination between advertising media is in fact a very large element of the higher pecuniary culture. (pp. 139-140)

### Simmel's (1904/1957) paper on "fashion"

The classic sociological paper on fashion was published by Georg Simmel in 1904.

The paper was reprinted in *The American Journal of Sociology* in 1957. According to

Simmel's abstract:

Fashion is a form of imitation and so of social equalization, but, paradoxically, in changing incessantly, it differentiates one time from another and one social stratum from another. It unites those of a social class and segregates them from others. The elite initiates a fashion and, when the mass imitates it in an effort to obliterate the external distinctions of class, abandons it for a newer mode—a process that quickens with the increase of wealth. Fashion does not exist in tribal and classless societies. It concerns externals and superficialities where irrationality does no harm. It signalizes the lack of personal freedom; hence it characterizes the female and the middle class, whose increased social freedom is matched by intense individual subjugation. Some forms are intrinsically more suited to the modifications of fashion than others: the internal unity of the forms called "classic" makes them immune to change. (p. 541)

In principle the scope of fashion can be very broad, but it is limited in practice.

Fashion occasionally will accept objectively determined subjects such as religious faith, scientific interests, even socialism and individualism; but it does not become operative as fashion until these subjects can be considered independent of the deeper human motives from which they have risen. For this reason the rule of fashion becomes in such fields unendurable. We therefore see that there is good reason why externals—clothing, social conduct, amusements—constitute the special field of fashion, for here no dependence is placed on really vital motives of human action. (p. 544)

Fashion plays a more conspicuous role in modern times, because the differences in our standards of life have become so much more strongly accentuated, for the more

numerous and the more sharply drawn these differences are, the greater the opportunities for emphasizing them at every turn. (p. 546)

By their nature, fashions become adopted broadly, but if a fashion were to become universal, it would no longer be a fashion.

The very character of fashion demands that it should be exercised at one time only by a portion of the given group, the great majority being merely on the road to adopting it. As soon as an example has been universally adopted, that is, as soon as anything that was originally done only by a few has really come to be practiced by all—as is the case in certain portions of our apparel and in various forms of social conduct—we no longer speak of fashion. (p. 547)

In the practice of life anything else similarly new and suddenly disseminated is not called fashion, when we are convinced of its continuance and its material justification. If, on the other hand, we feel certain that the fact will vanish as rapidly as it came, then we call it fashion. (pp. 547-548)

It is peculiarly characteristic of fashion that it renders possible a social obedience, which at the same time is a form of individual differentiation. Fashion does this because in its very nature it represents a standard that can never be accepted by all. (pp. 548-549)

Sometimes individuals exaggerate a fashion to the point of caricature, these people are the “fashion dudes.”

In the dude the social demands of fashion appear exaggerated to such a degree that they completely assume an individualistic and peculiar character. It is characteristic of the dude that he carries the elements of a particular fashion to an extreme; when pointed shoes are in style, he wears shoes that resemble the prow of a ship; when high collars are all the rage, he wears collars that come up to his ears; . . . (p. 549)

If we satisfy the demands of fashion in the matter of externals, we are freer to be ourselves.

[Fashion] provides us with a formula by means of which we can unequivocally attest our dependence upon what is generally adopted, our obedience to the standards established by our time, our class, and our narrower circle, and enables us to withdraw the freedom given us in life from externals and concentrate it more and more in our innermost natures. (p. 554)

Fashion has its greatest effect on the middle classes.

The real variability of historical life is . . . vested in the middle classes, and for this reason the history of social and cultural movements has fallen into an entirely different pace since the *tiers etat* assumed control. For this reason, fashion, which represents the variable and contrasting forms of life, has since then become much broader and more animated, and also because of the transformation in the immediate political life, for man requires an ephemeral tyrant the moment he has rid himself of the absolute and permanent one. (pp. 555-556)

Classes and individuals who demand constant change, because the rapidity of their development gives them the advantage over others, find in fashion something that keeps pace with their own soul movements. Social advance above all is favorable to the rapid change of fashion, for it capacitates lower classes so much for imitation of upper ones, and this the process characterized above, according to which every higher set throws aside a fashion the moment a lower set adopts it, has acquired a breadth and activity never dreamed of before. (p. 556)

Fashions may recur:

As soon as an earlier fashion has partially been forgotten there is no reason why it should not be allowed to return to favor and why the charm of difference, which constitutes its very essence, should not be permitted to exercise an influence similar to that which it exerted conversely some time before. (p. 557)

[M]any forms in their deeper nature show a special disposition to live themselves out in fashion, just as other offer inward resistance. Thus, for example, everything that may be termed "classic" is comparatively far removed from fashion and alien to it, although occasionally, of course the classic also falls under the sway of fashion. (p. 557)

Simmel concludes:

To sum up, the peculiarly piquant and suggestive attraction of fashion lies in the contrast between its extensive, all-embracing distribution and its rapid and complete disintegration; and with the latter of these characteristics the apparent claim to permanent acceptance again stands in contrast. Furthermore, fashion depends no less upon the narrow distinctions it draws for a given circle, the intimate connection of which it expresses in the terms of both cause and effect, than it does upon the decisiveness with which it separates the given circle from others. And, finally, fashion is based on adoption by a social set, which demands mutual imitation from its members and thereby release the individual of all responsibility—ethical and aesthetic—as well as of the possibility of producing within these limits individual accentuation and original shading of the elements of fashion. Thus fashion is shown to

be an objective characteristic grouping upon equal terms by social expediency of the antagonistic tendencies of life. (p. 558)

Simmel makes two points which are not strictly relevant to the question of fashion in science, but which are important in how the nature—or the very existence—of fashion depends on conditions in the society in which it is seen. First, fashion will not be seen when there is too much variability or when there is too little. Simmel writes:

It is said that there was no ruling fashion in male attire in Florence about the year 1390, because every one adopted a style of his own. Here the first element, the need of union, was absent; and without it, as we have seen, no fashion can arise. Conversely, the Venetian nobles are said to have set no fashion, for according to law they had to dress in black in order not to call the attention of the lower classes to the smallness of their number. Here there were no fashions because the other element essential for their creation was lacking, a visible differentiation from the lower classes being purposely avoided.

Second, the people who follow fashion must be motivated to express themselves in that way:

During the fourteenth and fifteenth centuries Germany exhibits an unusually strong development of individuality. Great inroads were made upon the collectivistic regulations of the Middle Ages by the freedom of the individual. Woman, however, took no part in this individualistic development: the freedom of personal action and self-improvement were still denied her. She sought redress by adopting the most extravagant and hypertrophic styles in dress. On the other hand, in Italy during the same epoch woman was given full play for the exercise of individuality. The woman of the Renaissance possessed opportunities of culture, of external activity, of personal differentiation such as were not offered her for many centuries thereafter. In the upper classes of society, especially, education and freedom of action were almost identical for both sexes. It is not astonishing, therefore, that no particularly extravagant Italian female fashions should have come down to us from that period. The need of exercising individuality in this field was absent, because the tendency embodied therein found sufficient vent in other spheres.

Meyersohn and Katz's "Notes on a natural history of fads"

Rolf Meyersohn and Elihu Katz (1957) discussed fashions under the heading of "fads," which term they used interchangeably with "fashions." They outline their purpose in their abstract:

The natural history of fads or fashions, a particular type of social change, is told as a succession of chronological stages, each characterized by the interaction among producers, distributors, and consumers. The process is thus: discovery of the potential fad, promotion by the discoverers and/or original consumers, labeling, dissemination, eventual loss of exclusiveness and uniqueness, and death by displacement. (p. 594)

Meyersohn and Katz point out an advantage of studying fads:

The study of fads and fashions may serve the student of social change much as the study of fruit flies has served geneticists: neither the sociologist nor the geneticist has to wait long for a new generation to arrive. (p. 594)

Meyersohn and Katz chose to ignore the distinction drawn by Sapir (1931) between fads and fashions. They say: "We apply both terms to transitory phenomena that involve a large number of people or a large proportion of members of a subculture." Much of what they write about could be considered either fashion or fad, and they are probably justified in not distinguishing the two. They certainly include phenomena that could fit in either category if one insisted on making the fashion versus fad distinction. One aspect of fashions (as distinct from fads) that they do not emphasize is the aspect of compulsion involved in following fashion.

They distinguish fashion from other movements by quoting Herbert Blumer (1946):

"Not only is the fashion movement unique in terms of its character, but it differs from other movements in that [it] does not develop into a society. It does not build up a social organization; it does not develop a division of labor among its participants with

each being assigned a given status; it does not construct a new set of symbols, myths, values, philosophy, or set of practices, and in this sense does not form a culture; and finally, it does not develop a set of loyalties or form a we-consciousness.” (p. 594)

Fashions can change without making changes in society as a whole. Meyersohn and Katz write:

Each new fad is a *functional alternative* [their italics] for its predecessor: this hit [song] for that hit, this parlor game for that one. On the other hand, the processes involved in broader social changes, such as religious conversions, an increase in the birth rate, or a movement toward suburban living, are too complex to permit simple substitution. (p. 595)

[I]n fashion the range of functional alternatives is far greater than in other domains of social change. Perhaps this is because fashions are found in relatively superficial areas of human conduct—in the trivial or ornamental. Many more changes have occurred in the styling of automobiles (e. g., in the length of tail lights) than in their engines. In a brilliant essay of fashion Simmel discusses the selective process whereby some cultural items are subject to fashion and others not, and he points out that the former must be “independent of the vital motives of human action.” (p. 595)

Triviality, of course, does not refer to the amount of emotion, affect, and functional significance surrounding an object but rather to its life-expectancy, its susceptibility to being *outmoded* [their italics]. Every object has a finite and estimable life-span; a pair of nylon stockings may last a few weeks, a dress a few years, an automobile a decade or two, a house much longer. It is one of the characteristics of fashion that replacement is made before the life-span ends. (p. 595)

Meyersohn and Katz mention four approaches to the study of fashion. The first is concerned with the social function of fashion. One question asked by those who use this approach is why one group rather than another is the carrier of fashion. For example, Veblen (1899) tried to explain why women were the ones whose dress was used to exemplify conspicuous consumption. Simmel (1904) also used this approach. Second, one might study the specific content of a fashion. For example, Kroeber (1919) studied the history of women’s fashionable evening dress with a time series of measurements made from illustrations found in fashion magazines. Third, one might study the network

of people involved in fashion. The fashion “system” involves interactions among producers, distributors and consumers of fashion. This is one of the approaches used by Blumer (1969).

Meyersohn and Katz use a fourth approach:

A fourth approach to the study of fashion, one which differs from the three cited above, though it operates within their orbits, seeks to determine the origin of a given item, the conditions of acceptance by the first participants (the “innovators”), the characteristics of those whom the innovators influence, the shifts from minority to majority acceptance, its waning, and where it goes to die. This is its natural history. (pp. 596-597)

Meyersohn and Katz express skepticism about Simmel’s rather impressionistic suggestion that fashions are transmitted downward from the upper classes:

While it is certainly likely that one function of fashion is in the display of social ascent and that one network for its transmission is from the upper classes downward, the extent to which this traditional view of fashion remains valid cannot be told without refined empirical study—without tracing the diffusion of particular fads and fashions in time and through their relevant social structures. (p. 597)

I would like to summarize Meyersohn and Katz’s whole article, but will concentrate on those points that are most relevant to fashion in science. For anyone interested in the fashion process, this is one of the most interesting articles and certainly should be read in its entirety.

In fact, the upper classes are not generally the sources of the fashions that they adopt; minorities not only provide material to majorities but are also an integral part of the total system. Not only do they offer a pretest—“if it goes well in Tangiers, maybe it has a chance here!”—but they are also a shelf and shelter for dangerous or threatening ideas. Mark Benney suggests that bohemia serve this function. For urban societies their bohemia are a kind of social laboratory. (p. 598)

Popular music was one of the areas of fashion considered by Meyersohn and Katz.

They mention Mitch Miller as an example of a “tastemaker.” They write of him:

A concert oboist himself, he was thoroughly trained as a serious musician. With an established reputation and a semibohemian personality which manifests itself in harmless ways, such as the wearing of a beard and keeping odd hours, he has been able to utilize good judgment in the popular-music world not only by being better educated but by having a far broader range of minorities to draw on for inspiration. (pp. 598-599)

This example is very suggestive for people interested in fashions in science. There are opinion leaders in science who bridge the gaps between fields and sub-fields. John Krebs is such a person in the study of my area of interest, optimal foraging theory. His knowledge and interests range from natural history through behavioral experiments to mathematical theory and statistical applications. While he has original ideas of his own, he is at his best bringing together people with different skills and telling big stories with many separate parts that would remain separate if he did not bring them together.

Blumer's (1969) paper, "Fashion: from class differentiation to collective selection"

Blumer's (1969) paper is the best that I have found at explaining the fashion process. This paper is a sort of manifesto for the sociological study of fashion. Blumer argues that fashion is more widespread and more important than earlier students have believed and he recommends that sociologists treat it more seriously. He begins by listing a number of deficiencies in the earlier treatment of fashion:

The major deficiencies in the conventional sociological treatment are easily noted—a failure to observe and appreciate the wide range of operation of fashion; a false assumption that fashion has only trivial or peripheral significance; a mistaken idea that fashion falls in the area of the abnormal and irrational and thus is out of the mainstream of human group life; and, finally, a misunderstanding of the nature of fashion. (p. 275)

Blumer addresses these deficiencies one-by-one.

Most earlier writers concentrated on fashion in terms of costume and adornment. But,

Blumer writes:

[Fashion] is easily observable in the realm of the pure and applied arts, such as painting, sculpture, music; drama, architecture, dancing, and household decoration. Its presence is very obvious in the area of entertainment and amusement. There is plenty of evidence to show its play in the field of medicine. Many of us are familiar with its operation in fields of industry, especially that of business management. It even touches such a relative sacred area as that of mortuary practice. Many scholars have noted its operation in the field of literature. Its presence can be seen in the history of modern philosophy. It can be observed at work in the realm of political doctrine. And—perhaps to the surprise of many—it is unquestionable at work in the field of science. That this is true of the social and psychological sciences is perhaps more readily apparent. But we have also to note, as several reputable and qualified scholars have done, that fashion appears in such redoubtable areas as physical and biological science and mathematics. The domain in which fashion operates is very extensive, indeed. To limit it to, or to center it in, the field of costume and adornment is to have a very inadequate idea of the scope of its occurrence. (pp. 275-276)

Not only does fashion extend to many areas, but it is not socially irrelevant or trivial.

Blumer writes:

In addition, the nature of the control wielded by fashion shows that its touch is not light. Where fashion operates it assumes an imperative position. It sets sanctions of what is to be done, it is conspicuously indifferent to criticism, it demands adherence, and it by-passes as oddities and misfits those who fail to abide by it. This grip which it exercises over its area of operation does not bespeak an inconsequential mechanism. (p. 276)

The movements of fashion are determined neither by frivolous individual behavior nor group excitement. As Blumer points out, different individuals adopt fashions for different reasons, but none are irrational. The fashion-conscious person is careful to determine what the fashion is so that he or she can be in fashion. The person who only grudgingly adopts fashion still adopts it deliberately if not happily. Even the person who

is indifferent to fashion and adopts it unwittingly does so because choices are limited and not because of some whim. And collectively, fashion is not a craze. Blumer writes:

While people may become excited over a fashion they respond primarily to its character of propriety and social distinction; these are tempering guides. Fashion has respectability; it carries the stamp of approval of an elite—an elite that is recognized to be sophisticated and believed to be wise in the given area of endeavor. It is this endorsement which under-girds fashion—rather than the emotional interaction which is typical of crazes. (p. 277)

Blumer describes and criticizes the fashion paper by Simmel (1904). First he points out the substance of Simmel's paper:

Let me use as a starting point the analysis of fashion made some sixty years ago by Georg Simmel. His analysis, without question, has set the character of what little solid sociological thought is to be found on the topic. His thesis was essentially simple. For him, fashion arose as a form of class differentiation in a relatively open class society. In such a society the elite class seeks to set itself apart by observable marks or insignia, such as distinctive forms of dress. However, members of immediately subjacent classes adopt these insignia as a means of satisfying their striving to identify with a superior status. They, in turn, are copied by members of classes beneath them. In this way, the distinguishing insignia of the elite class filter down through the class pyramid. In this process, however, the elite class loses these marks of separate identity. It is led, accordingly, to devise new distinguishing insignia which, again, are copied by the classes below, thus repeating the cycle. (pp. 277-278)

There are several features of Simmel's analysis which are admittedly of high merit. One of them was to point out that fashion requires a certain type of society in which to take place. Another was to highlight the importance of prestige in the operation of fashion. And another, of particular significance, was to stress that the essence of fashion lies in a process of change—a process that is natural and indigenous and not unusual and aberrant. Yet, despite the fact that his analysis still remains the best in the published literature, it failed to catch the character of fashion as a social happening. It is largely a parochial treatment, quite well suited to fashion in dress in the seventeenth, eighteenth, and nineteenth century Europe with its particular class structure. But it does not fit the operation of fashion in our contemporary epoch with its many diverse fields and its emphasis on modernity. (p. 278)

Blumer goes on to show how the modern fashion process differs from that described by Simmel. Blumer describes his own study of the women's fashion industry in Paris.

He observed that at a seasonal opening of a major Parisian fashion house there are a

hundred or more designs of women's evening wear presented to an audience of one or two hundred buyers. The managers of the fashion house are able to indicate a group of about thirty designs among which will fall about six or eight that are chosen by the buyers. Blumer found it impressive that so many buyers, deciding independently, would all agree on such a small subset of all the original designs. Blumer was stuck by three points: (1) The determination of fashion takes place through an "intense process of selection." (2) "The buyers were immersed in and preoccupied with a remarkably common world of intense stimulation." "The buyers became the unwitting surrogates of the fashion public." (p. 279) (3) The dress designers derived their ideas from three sources: a) pictures of old fashions and clothes from other places, b) examples of current and recent styles, and most importantly, c) recent expressions of modernity from areas such as the fine arts, literature, politics, current events and discussions.

Blumer saw the role of the elite differently than did Simmel. The elite neither chooses fashions and then is imitated, nor can it impose fashions of the lower classes. Blumer says that what is central to fashion is "*to be in fashion.*" (p. 280, his italics) It is at least as important to the upper classes to be in fashion as it is for the lower classes. However, even the designers, the fashion houses and the elite are unable to set a fashion that the public does not want. Blumer offers the example of the trend toward short skirts, which were popular in 1922, when the fashion industry decided to reverse the trend. Despite a concerted effort to reverse the fashion trend, short skirts stayed popular until 1929. (p. 281) The role of the elite in fashion is to illustrate or embody fashions, but not to select or impose them. Blumer summarizes:

*The fashion mechanism appears not in response to a need of class differentiation and class emulation but in response to a wish to be in fashion, to be abreast of what has good standing, to express new tastes which are emerging in a changing world. (p. 282, his italics)*

Blumer (p. 282) points out that changes in fashion follow from changes in collective taste and sensitivity, but that it is not clear exactly how these change. He does observe two facts about the nature of fashions, they show historical continuity and they are characterized by modernity:

The history of fashion shows clearly that new fashions are related to, and grow out of, their immediate predecessors. This is one of the fundamental ways in which fashion differs from fads. Fads have no line of historical continuity; each springs up independently of a forerunner and give rise to no successor. In the case of fashion, fashion innovators always have to consider the prevailing fashion, if for no other reason than to depart from it or to elaborate on it. The result is a line of continuity. Typically, although not universally, the line of continuity has the character of a cultural drift, expressing itself in what we customarily term a "fashion trend." (p. 283)

Fashion is always modern; it always seeks to keep abreast of the times. It is sensitive to the movement of current developments as they take place in its own field, in adjacent fields, and in the larger social world. Thus, in women's dress, fashion is responsive to its own trend, to developments in fabrics and ornamentation, to developments in the fine arts, to exciting events that catch public attention . . . , to political happenings, and to major social shifts such as the emancipation of women or the rise of the cult of youth. (p. 283)

Blumer takes pains to reject psychological interpretations of fashion. He lists a number of psychological impulses that have been suggested as motives for following fashion, but he dismisses them all as insufficient to explain fashion. He writes:

The psychological schemes fail to come to grip with the collective process which constitutes fashion—the emergence of new models in the area of changing experience, the differential attention given them, the interaction which leads to a focusing of collective choice on one of them the social endorsement of it as proper, and the powerful control which this endorsement yields. Undoubtedly, the various feelings and impulses specified by psychologists operate within the fashion process—just as they operate within non-fashion areas of group life. But their operation within fashion does not account for fashion. Instead, their operation presupposes the existence of the fashion process as one of the media for their play. (p. 285)

Both [the conventional sociological and psychological schemes] fail to perceive fashion as the process of collective selection that it is. The schemes do not identify the nature of the social setting in which fashion arise nor do they catch or treat the mechanism by which fashion operates. (p. 285)

Blumer tries to show the broad generic character of fashion by listing six conditions that he believes are sufficient for the appearance of fashion:

- (1) The area in which fashion operates must be changing.

If the area is securely established, as in the domain of the sacred, there will be no fashion. Fashion presupposes that the area is in passage, responding to changes taking place in a surrounding world, and oriented to keeping abreast of new developments. The area is marked by a new psychological perspective which places a premium on being "up to date" and which implies a readiness to denigrate given older forms of life as being outmoded. (p. 286)

- (2) The area must be open to the recurrent presentation of models of new forms.

These models, depending of the given areas of fashion, may cover such diverse things as points of view, doctrines, lines of preoccupation, themes, practices, and the use of artifacts. . . . Each of [the models] is metaphorically a claimant for adoption. Thus their presence introduced a competitive situation and sets the stage for selection between them. (p. 286)

- (3) There must be freedom to choose among the models.

This implies that the models must be open, so to speak, to observation and that facilities and means must be available for their adoption. If the presentation of new models is prevented the fashion process will not get under way. Further, a severe limitation in the wherewithal needed to adopt models (such as necessary wealth, intellectual sophistication, refined skill, or esthetic sensitivity) curtails the initiation of the fashion process. (p. 286)

- (4) There is no rational way to choose among the models presented for adoption.

Fashion is not guided by utilitarian or rational considerations. . . . [T]he pretended merit or value of the competing models cannot be demonstrated through open and decisive test. Where choices can be made between rival models on the basis of objective and effective test, there is no place for fashion. It is for this reason that fashion does not take root in those areas of utility, technology, or science where asserted claims can be brought before the bar of demonstrable proof. In contrast, the absence of means for testing effectively the relative merit of competing models opens

the door to other considerations in making choices between them. This kind of situation is essential to the play of fashion. (pp. 286-287)

- (5) Prestige figures must be available to espouse one or another of the competing models. People often fail to recognize fashion when they see it. Blumer writes:

The absence or inadequacy of compelling tests of the merit of proposals opens the door to prestige-endorsement and taste as determinants of collective choice. The compelling role of these two factors as they interact easily escapes notice by those who participate in the process of collective choice; the model which emerges with a high sanction and approval is almost always believed by them as being intrinsically and demonstrably correct. This belief is fortified by the impressive arguments and arrays of specious facts that may frequently be marshaled on behalf of the model. Consequently, it is not surprising that participants may fail completely to recognize a fashion process in which they are sharing. The identification of the process as fashion occurs usually only after it is gone—when it can be viewed from the detached vantage point of later time. (p. 288)

- (6) The area must be sensitive to outside influences.

[T]he area must be open to the emergence of different interests and dispositions in response to (a) the impact of outside events, (b) the introduction of new participants into the area, and (c) changes in inner social interaction. (p. 287)

Blumer described three societal roles of fashion:

The first is a matter which is rather obvious, namely, that fashion introduces a conspicuous measure of unanimity and uniformity in what would otherwise be a markedly fragmented arrangement. If all competing models enjoyed similar acceptance the situation would be one of disorder and disarray. . . . By establishing suitable models which carry the stamp of propriety and compel adherence, fashion narrowly limits the range of variability and so fosters uniformity and order, even though it be passing uniformity and order. In this respect fashion performs in a moving society a function which custom performs in a settled society. (p. 289)

Second, fashion serves to detach the grip of the past in a moving world. . . . To meet a moving and changing world required freedom to move in new directions. Detachment from the hold of the past in no small contribution to the achievement of such freedom. In the areas of its operation fashion facilitates that contribution. In this sense there is virtue in applying the derogatory accusations of being “old-fashioned,” “outmoded,” “backward,” and “out-of-date.” (p. 289)

Third, fashion operates as an orderly preparation for the immediate future. By following the presentation of new models but by forcing them through the gauntlet of competition and collective selection the fashion mechanism offers a continuous means of adjusting to what is on the horizon. On the one hand, it offers to innovators and creators the opportunity to present through their models their ideas of what the immediate future should be in the given area of fashion. On the other hand, the adoption of the models which survive the gauntlet of collective selection gives expression to nascent dispositions that represents an accommodation of orientation to the immediate future. Through this process, fashion nurtures and shapes a body of common sensitivity and taste, as is suggested by the congeniality and naturalness of present fashions in contrast to the oddness and incongruity of past fashions. (p. 290)

In his conclusion Blumer writes, “In areas of life—and they are many—in which the merit of the proposals cannot be demonstrated, [fashion] permits orderly movement and development. Blumer expressed his hope that sociologists would take up his challenge to study fashion much more broadly than in the tradition area of dress and adornment.

## **FASHIONS IN CLOTHES**

The papers that I have discussed in detail are about fashions in general. These were the most interesting works that I found, probably the most relevant to fashions in science. There are many works about fashions in clothes, but these tend to emphasize the clothes rather than the fashion process. With the exception of Sperber’s (1990) book, the treatment of fashion in science was casual at best. Blumer’s (1969) paper is the most valuable of all the works that I have found. I wish that someone had followed his lead and studied the operation of the fashion process in natural science. Perhaps the best hope is to try to understand how the fashion process works in an area in which it is known to operate—women’s dress—and then see how the ideas that explain the fashion process in that area apply to natural science.

Blumer (1969) refers to only a few works, but among them are some very interesting and useful ones including the book by Agnes B. Young (1937), *Recurring Cycles of Fashion 1760-1937*, and the book by Kurt and Gladys Engel Lang (1961), *Collective Dynamics*. Young mentions the work on imitation by Gabriel Tarde, a great nineteenth century French criminologist and sociologist, whose book, *Laws of Imitation* (1895, translated 1903), she regards as essential reading for anyone seriously interested in fashion. In a brief, annotated bibliography at the end of their chapter 15, "Fashion: identification and differentiation in the mass society," Lang and Lang mention four basic works on fashion, those by Veblen (1899), Simmel (1903) and Sapir (1931), which I have already discussed, and William Graham Sumner's (1906) *Folkways*. Lang and Lang also mention three books on fashions in clothes: Hawes (1938), Hurlock (1929) and Nystrom (1928). Roach and Bubolz (1965) give a much longer annotated bibliography. I have not looked at the works that they cite, but I found all the books cited by Lang and Lang interesting and useful, with the exception of Hurlock's, which seemed to be too concerned with methodology and to place too much reliance on survey data of questionable relevance.

The works on fashion that I read seemed to be divided into two classes; theoretical work without much reference to fact, and factual work without much reference to theory. One factual work that was very suggestive theoretically was the book by Agnes B. Young (1937), which looked at fashions in women's day dresses from 1760 to 1937. Young illustrated her book with one typical example of fashionable women's day dress for each of the 178 years from 1760 to 1937. The series shows slight changes from year to year, but a few major changes in the shape of the skirts, with each of three forms persisting for

a period of from thirty to forty years. She referred to each of these periods as a “cycle,” but if we use the term “cycle” to refer to the whole period from the time that one form comes into fashion until it recurs, then her data suggest a nice 100-year cycle. Her illustrations cover one and two-thirds cycles, but she believes that the missing one-third [what I call one-third of a cycle, what she calls a cycle] actually occurred before the time she used for the beginning of her study [too few illustrations were available before 1760 for her method to be applied that early, but what evidence was available was available suggested that the pattern she described had been in evidence before 1760, at least from 1735 to 1760]. The three forms that Young identifies are bell-shaped, then full-backed and then tubular [exemplified by hoop skirts, bustles and the flapper style of the 1920s, respectively].

The most interesting thing about Young’s observations is that there are two time scales in women’s fashions. One is the annual change in dress style. Such changes must be large enough to be noticeable—so that they produce a different fashion—but they are almost always small enough to leave the basic form unchanged. The basic forms change slowly, usually once every thirty years or so, and when they change they change to a form that has been seen before, but not to the form that was in fashion thirty years before. Young suggests that the previous form might still be familiar (and regarded as old-fashioned) by those who have followed fashion for over thirty years, but it is safe to change to the form that went out of fashion seventy years before.

It is not clear how long Young’s regime of regular changes in skirt form extended, both before 1760 (or before 1725) and after 1937. It could be that a certain pattern

appeared at a time, operated for two or three hundred years and then disappeared. What is interesting is that the pattern existed and was on display for two hundred years.

Another interesting observation of Young (1937, Chapter IX) was that during the 30- to 40-year period of domination by a particular form of skirt, the first few years seemed to illustrate a sort of experimentation. Then there was a period of about twenty years of perfection, followed by some years of degeneration before the switch to a new basic form. This observation is similar to Gombrich's (1968) on the development of classic style.

The books by Nystrom (1928) and Hawes (1938) were also useful discussions of fashions in clothes. Nystrom, who was an economist involved in the marketing of clothes, gave a broad, current, historical treatment of fashions. He offered a good view of fashions around his time. Elizabeth Hawes (1938) wrote an account of her experiences as a young fashion designer. She distinguished *chic*, *style* and *fashion*. *Chic* is a French word, and as Hawes says, there is no word for *chic* in English. To be *chic* is a full-time job, and one woman can hardly be *chic* without help. While Americans cannot be *chic*, they can have style or follow fashion. Hawes, who thought that popular fashions were often ugly and almost always badly fitting and uncomfortable, thought that women's clothes (and men's clothes, for that matter) should be comfortable and becoming.

I looked at two more recent books about fashion in clothes, one by Penny Storm (1987) and the other by Diana Crane (2000). These books treat the substance of fashion, but the fashion process itself is not their subject, and it is not treated as extensively as I would have liked. I wish I could find a modern treatment of fashions in clothes in the manner and quality of Nystrom's (1928).

## FASHIONS IN SCIENCE

The title of Irwin Sperber's book (1990) is the same as the title of this section, and of this technical report as a whole. Sperber's book is a valuable reference, but it is confined to social science. It is also too critical of the work that it treats. Sperber's goal was to criticize sociology in general, and he took the sociological treatment of fashion as his subject. His method was to show that even those who treat fashion are subject to the rule of fashion. This may or may not be true, but I would have preferred having more effort devoted to extracting the valuable ideas about fashion that earlier workers had produced, rather than technical criticism of their methodology.

Sperber (1990) discussed the book by Sorokin (1956), "Fads and Foibles in Modern Sociology and Related Sciences." This book, which was an iconoclastic look at social science methodology, was particularly interesting to me because it included criticism of the use of statistics, especially hypothesis testing. Sorokin's attitude was magisterial, his book expressed his disdain for the practices of ordinary mortals. Marvin Dunnette (1966) gave a talk, "Fads, fashions and folderol in psychology," which made some of the same points as Sorokin's book, but Dunnette intended to be amusing, and he seemed to be less pleased with his title when he gave his talk than he was when he proposed it. Dunnette also criticizes the use of statistical hypothesis testing. About the time that Dunnette wrote his paper I was looking at some of the psychological literature to see whether statistics was being used properly. I expected to find a lot of statistical mistakes but my expectation was disappointed. It seemed to me that the statistics was correct (the rats *were* behaving significantly differently in different experimental conditions). However,

the implications for human behavior drawn from these animal experiments did not seem as clear to me as they did to the authors. Maybe this was the fashion of the time: do an experiment, get the numbers right, and say anything you please in the discussion.

### Recent treatment of fashions in science

One way to investigate the work on a subject is to find one book or paper, look at the work cited, and look at the more recent work that cites the earlier work. This is what I have done. I only found one piece of work on fashions in natural science that referred to Sperber's (1990) book, the paper by Sherman (1999) on geomorphology. However, there is a great deal of work about fashions in economics, some of which refers to Blumer's (1969) paper. I found two main bodies of work, one in management, the other in finance.

Eric Abrahamson (1991, 1996; see also Keisser 1997 and Carson *et al.* 2000) wrote about "management fashion." His point was that advice on how to run businesses has the nature of fashion. He was not interested simply in calling management idea "fashions." He also showed how the fashion process worked in management, how there is a demand for up-to-date advice, and there are people willing to supply the advice. Not only has the fashion process been described for management, but empirical evidence for the rise and fall of management fashions is offered.

The idea of "informational cascades" has been developed by students of finance to explain fads in investment. While there were some inklings earlier (for example, Akerlof 1980), the idea of "informational cascades" irrupted with three papers published in 1992, by Bannerjee, by Bikhchandani *et al.*, and by Welch. The idea, which I think is

fascinating, is that if individuals have little direct information about the quality of a decision, but they know a lot about what other people have decided, then everyone may make the same decision, even though the decision is not the best. For example (this is my over-simplification of an already simple problem), imagine that each of a large number of people wants to know whether a coin favors heads or tails (assume that it is not fair). People toss the coin in succession and decide whether the coin favors heads or tails. Each person observes only one coin toss, but they know what decision each person in succession makes. Depending on how the first few tosses come out and on the rules that everyone uses, it may be best for every individual after the first few to make the same decision, basing that decision on what others have decided, and ignoring the limited experience of one coin toss. This unanimity, based solely on the behavior of others, is called an “informational cascade.”

[It is interesting to compare this model in which people do not share information, but know what others are doing, with a Bayesian model of David Blackwell and Lester Dubins (Blackwell and Dubins 1962), in which people who initially disagree will eventually come to agreement if they share enough information.]

There have been over a hundred papers on management fashions and on informational cascades. I know of two other areas that have been mentioned, but only mentioned. The first, which got me interested in fashions in science, was the commentary piece by Lawrence and Locke (1987) on the insect physiologist, Vincent Wigglesworth. Lawrence (1999) also discussed fashions briefly in his review of Slack’s (1999) book, “Ego & Egg: An Almost True Story of Life in the Biology Lab.” Slack’s book is an amusing tale of the

work life of a developmental biologist, and it does mention academic fads and fashions, but it does not attempt to describe the fashion process as Abrahamson (1996) does.

More recently, James Glanz (2001) wrote a Science Times essay titled, "The web as dictator of scientific fashion," about a symposium on ideas in modern physics that was held at Seven Pines. The point of the essay was that with nearly universal access to the World Wide Web, a possibly unhealthy concentration of attention on a few problems was occurring in physics. One consequence, which was also mentioned by Lawrence and Locke (1997), might be the disappearance of distinct national schools, or approaches to particular subjects. One interesting example was suggested. During the early 1970's the lack of communication between the Soviet Union and the West made it possible for Soviet scientists to develop field theory, which had fallen from fashion in the West. Later it became clear that this was the best approach, and new work was able to build on the out-of-fashion work that had been done in the Soviet Union.

I wondered whether people who were mentioned in Glanz's article had thought more about fashions in science. I sent e-mails to several of them. I think that the answer is no, but one line that I followed did yield a little fruit. I asked Roger Stuewer, one of the organizers of the meeting if he had thought about fashions in science, or know anyone who had. He referred me to Gerald Holton, who referred me to John Ziman. They all denied having worked on fashions in science, but John Ziman referred me to Robert Merton. He also mentioned that Michael Young had recently proposed that they work together on almost exactly the subject I asked about.

I e-mailed both Merton and Young. Young replied that he was interesting in studying fashions in education. Merton mentioned a paper by himself and Richard Lewis (Merton

and Lewis 1971). This paper is not about fashions directly (it is about the modern tendency to hurry and publish many small papers, but the point of the paper is to show that the desire for priority is nothing new—I think that by concentrating on its historical point the paper overlooks quantitative differences in the pressures facing modern scientists). One paper cited by Merton and Lewis, Reif (1961), discussed competition between scientists and the advantage that senior scientists have. That reminded me of a former colleague of mine and his experience with a compatriot who had the habit of publishing the thesis work of younger scholars (including my colleague). It might be argued that science would advance more rapidly if more work were stolen from little, weak people and published by bigger, stronger people, but this would not be good for the little people. I recalled a very amusing bit of video of a pair of pigs in a Skinner-box. A lever that could produce food was located at one end of the cage, but the food was delivered at the other end. The point of the experiment was that the smaller pig would not pull the lever to give the food to the bigger pig, because the little pig would not get any food. On the other hand, the bigger pig would pull the lever for the smaller pig, because after the smaller pig got the food, the bigger pig could rush across and seize what was left. I suppose that the image of the scientific communities as pigs in a Skinner-box is not very respectful, but it did occur to me.

### Three ideas from three books

Here are three ideas that I had reading three books years ago. They are not about fashions, in fact, quite the opposite, they reflect inertia, but they may be relevant to

fashions. First, single ideas are worked hard. People like simple explanations, and when a simple idea explains a number of ideas, the idea may be developed into a system.

Edwin G. Boring (1957) illustrated this idea in his "History of Experimental Psychology."

One old idea, based on observations on brain lesions and localized injuries, was that brain function was strictly localized. There was a great deal of evidence and this idea explained many observations. A later, conflicting idea was mass action, that the effect of brain damage depended on its quantity, not location. Experimental studies of animals gave evidence for this idea. Localized function and mass action were conflicting ideas, each of which had evidence to support it. When ideas are looked at from the vantage point of history it is easier to see both the advantages and disadvantages of each. But when an idea is rampant, it may promise to solve all the problems in the subject.

Second, when one tells a short story about science, ideas may appear as needed, but an idea which may be just the thing needed this week, or this month, is sometimes the result of a career of work. Horace Freeland Judson's (1979) history of molecular biology, "The Eighth Day of Creation: The Makers of the Revolution in Biology," tells the story of the discover of the double helix and of the genetic code. The story, perhaps not quite a "short story," is exciting, with frequent advances based on the discovery and combining of new facts and ideas. At a certain point a certain fact is needed. The people who need the fact are not always the ones who discover it. Someone else, who has studied and worked hard on that one problem may discover the fact which is needed at a particular moment. The person who built the edifice is not the one who cut the stone. If one reads the short stories of science, one sees the ideas pop up and be used, but one does not see the long

lives of hard work that produced the individual facts and ideas that were critical for the story.

Third, ideas may rise to prominence, fade and then reappear. Sharon E. Kingland (1985) illustrates an example in her book, "Modeling Nature: Episodes in the History of Population Ecology." Mathematical models of population ecology were developed in the 1920's by Raymond Pearl, Alfred Lotka, and Vito Volterra. While the ideas did not disappear, they were not prominent in the 1930's and 1940's. The mathematical approach to population ecology reemerged in the 1960's with the work of Robert MacArthur, whose work was an inspiration to me. A connection between the early and later work was G. E. Hutchinson, who was MacArthur's teacher, and who taught or influenced many of the outstanding ecologists of his time. The point is that there are ideas that everyone might know at one time, but that fall out of attention. But these ideas are not gone, they reside in the minds of a few people, who may work on them themselves, or who may pass them on to others.

[I am not sure that I have any of these three stories right, but I think that there is something to the ideas that I have pulled from the stories.]

## **CONCLUSION**

This technical report is a long annotated bibliography and some musings. I have written this for myself mainly. I wanted to have something that I could look at to find references, and I want to be able to see what I thought at one time. The big questions are: Is there a fashion system in science? If so, how does it work, and what are its

consequences? I think that there are fashions in science (and, I think that there is a star system in science [Green 2001]). Ideas and methods do rise in popularity and then fall, with their popularity being greater than is justified by their importance, than less. Scientific and other scholarly fashions result from the same psychological forces that are in play in clothes fashions, the need for novelty (an academic's need to satisfy the demands of his dean by original research), while remaining respectable (the work must be approved by reviewers, it must not be too different). The scholarly world has arbitrators of taste, but the popularity of scholarly work is not due solely to those who produce or promote them. The consumer is also important. Work must be read, used and cited, to be successful. [The President of Harvard recently turned down a highly recommended appointment. One suggested reason was that the scholar's work had not been cited enough.] Like fashions in clothes, scholarly fashions are enforced by the fear of being out of fashion. Papers can be rejected and work can be dismissed for being out-of-date. Like fashions in clothes, scholarly fashions can repeat.

Unlike fashions in clothes, scientific work does not exist in areas where there is no adequate basis for judgment. Clearly unsound work will be rejected (eventually, at least), but when a subject is developing it is not always clear what the best path is, and any approach not obviously unsound has a chance. If an approach is fruitful (in the sense that it satisfies the need of the field, or of workers in a field—perhaps the need to publish papers), it has a chance to become fashionable. In fashions, novelty may be more important than beauty and fashions can be ugly. The purpose of fashion is not to achieve perfection. In a fashion system, if perfection were achieved by chance, the style would have to change because novelty is what is demanded. Perfection is not a goal of science.

If perfection were achieved, or if it were closely approached, scientists would go on to try to solve some other problem.

It may be that fashion is important to some scientists and not others. There may be scientific fashion centers and places where fashion hardly penetrates. Harvard President Neil Rudenstine (1992) gave a talk in which he said that the 'half-life' of what is learned in the humanities is eight or ten years, and in math and the sciences it is three or four years. It seems to me that this is a silly and self-serving statement. Harvard is nothing if not fashionable and up-to-date. This is one of the main things that it has to sell. Of course, following the fashions is expensive, but if most of the knowledge that one would learn at the University of Michigan is out-of-date, it might be worthwhile to pay more and get the latest word at Harvard. Of course, that fact that knowledge is advertised or marketed as fashion does not mean that it is fashion, but it is important to realize that fashions in knowledge have been used as a marketing tool.

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