

# THE ORGANIZATION OF CONSUMPTION

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## INTRODUCTION

In neoclassical economics, whose golden idyll of general equilibrium theory has only lately lost some of its luster, the consumer is important but inactive. Pareto is supposed to have said that we do not need the consumer at all so long as he leaves us a snapshot of his preferences. It is the logical structure of those preferences, not choice in any existential sense, that drives the Walrasian engine.

It is easy enough to make fun of this approach. But our complaint here – if it can even be called that – is not the verisimilitude of the neoclassical consumer. Indeed, neoclassical demand theory is perfectly justifiable within its scope, even if that scope is far more limited than most realize (Langlois and Koppl 1991). In its Marshallian form, that theory has been useful in explaining the direction of changes in price and quantity in the short run as a result of changes in boundary conditions. But for other questions – questions in which the profession is becoming increasingly interested – the consumer-as-preferences approach may be inadequate. In addition to some of the old questions like fashion and advertising, issues of more recent interest, like the communicative role of consumption and the boundary between producers and consumers, require that we take a different tack (Cosgel 1994, 1997). In this chapter we recast the activities of the consumer not only as production activities but also as problem-solving activities that require the purchase, development, and invention of consumption capabilities.

## CONSUMPTION AS PRODUCTION

Of course, neoclassical consumer theory (Lancaster 1971; Stigler and Becker 1977) has already absorbed the simile of consumption as production. Rather than maximizing a utility func-

tion over market goods, the consumer produces basic utility by choosing among alternative production technologies and engaging in a household production process in a standard neoclassical way. Stigler and Becker (1977: 77) argue that their reformulation of the consumer's choice problem 'transforms the family from a passive maximizer of the utility from market purchases into an active maximizer also engaged in extensive production and investment activities.'

We very much agree with the notion of consumption as production; but we disagree with the formulation of production in terms of a production function.<sup>1</sup> The neoclassical account of production considers the productive knowledge of the firm as given and unproblematic. The analogy to consumption would thus require the consumer to be endowed with all the knowledge, experience, and skills that the production of utility necessitates.

Increasingly, students of the economics of production have sought to open up the black box of the production function. One promising alternative is the dynamic capabilities approach, which is currently infiltrating both industrial economics and corporate strategy (Teece and Pisano 1994; Langlois and Robertson 1995). In this approach, producers do not find productive knowledge as given - a matter of 'blueprints' available in principle at no cost to all. Rather, productive knowledge is a matter of capabilities (Richardson 1972) that are acquired slowly and at some cost through a historical process of learning. At the most fundamental level, these capabilities are in the nature of what Nelson and Winter (1982) call routines, habitual patterns of skill-like behavior. As Michael Polanyi (1958) argued, skills of this sort represent in large part a kind of knowledge that is 'tacit' - it cannot be fully articulated but must be acquired through observation and practice.

One of the main implications of this view is that individuals and organizations are necessarily limited in what they can do well (or cheaply) by what they have done in the past. Another implication is that the line between production costs and transaction costs is far more blurry than one finds it to be in the literature of organization.<sup>2</sup> One cannot take production costs as given and then explain organizational form or the boundaries of the firm on the basis of the costs of transacting (however one defines those) alone. For one thing, transacting is also an activity that requires skill, and the costs one incurs in transacting are thus a matter of one's capabilities. Moreover, as Langlois and Robertson (1995) argue, one of the principal costs governing organizational boundaries are the 'dynamic' transaction (or governance) costs of acquiring the capabilities one needs to take advantage of a profit opportunity. The organizational question is whether new capabilities are best acquired through the market, through internal learning, or through some hybrid organizational form. And the answer will depend on (a) the already existing structure of capabilities; and (b) the nature of the economic change involved.

If a profit opportunity requires a configuration of capabilities different from what already exists in the economy, then a Schumpeterian process of creative destruction may be set in motion. If the old configuration of capabilities is decentralized into what we may loosely call markets, then a reorganization within a single organization – vertical integration – may most cheaply bring about the necessary redeployment. If, by contrast, the old configuration of capabilities lies within large vertically integrated organizations, creative destruction may well take the form of markets superseding firms. History offers many examples of both.

The organizational possibilities are tempered by the nature of the reconfiguration required. If change is systemic – if it requires simultaneous change in many parts of a complex system – internal organization may prove less costly *ceteris paribus*. If, however, change is autonomous – if change can take place in separate subsystems without greatly affecting the way those subsystems are connected – then markets, which can take advantage of specialized and decentralized knowledge, may be at a relative advantage. Here the issue of standards enters the picture: for standards are typically ways of fixing the connections among subsystems so that change is channeled in autonomous directions. Langlois and Robertson (1992, 1995) call this kind of structure a modular system.

It is our contention in this chapter that many of these ideas, developed in the context of production and the boundaries of the firm, will translate well into the domain of consumption and the problem of the boundaries between consumers and producers. If, as Becker, Stigler, Lancaster and others argue, consumers are really also producers, then consumers, in our approach, require capabilities in order to consume. They require skills and routines. The organization of consumption, like the organization of production, will be a matter of the costs of acquiring new capabilities, which will in turn be a function of the pattern of capabilities available to the consumer and the systemic structure of consumption.

## CONSUMER NEEDS AND PROBLEM SOLVING

To understand the capabilities that the consumer requires, consider first the structure of the problem which the consumer faces. The consumer's decision process starts with needs at a basic level, such as the need for housing, food, entertainment, or transportation. To satisfy each need, the consumer faces a series of choices that utilize institutions and market goods or services in a production process. For example, one can satisfy the need for transportation by walking to the destination, by using public transportation, by driving a car, by flying on an airplane, and so on. Moreover, one can undertake each of these subactivities in a number of different ways, which in turn evoke successive needs – and raise several further questions.

What route should I follow in walking? Should I take the bus or the subway? Should I drive my own car or rent one? Which airlines should I choose and what itinerary should I follow? Satisfying the need for transportation requires the consumer to engage in a process of problem solving.

Note that the needs of the consumer and the process of problem solving have a hierarchical structure. That is, the choice of a certain course of action at a certain level precedes and sets the parameters of succeeding courses of action. For example, if I decide to solve the problem of transportation by driving to the destination myself, I would then have to decide whether to rent a car or to use my own. Suppose I decided to drive a rental car. I would then need to decide, for example, the type of a car to rent, the amount of insurance coverage, the time length of the rental contract, and so on. After renting the car, I would need to decide on such things as the type, amount, and location of gas to purchase or the exact route to follow in order to reach my destination. A particular choice at one level in the hierarchy conditions subsequent decision problems and the alternatives available at lower levels.

Because of the consumer's cognitive limitations, however, he or she may not know all the available alternatives at any particular level of the hierarchy or may be unable to process all of the information about known available alternatives in order to choose the best course of action. Decisions at each level are thus not simple matters of maximizing with known and given alternatives or of following clear 'blueprints' to satisfy needs. How then does the consumer with limitations solve problems in an uncertain world? What kind of capabilities should the consumer develop in order to deal with uncertainty and to sort out and process information in satisfying needs at each level?

## CAPABILITIES AS ROUTINES

Consumption, as we argued, requires not just given preferences, budget constraints and production technology, but also capabilities (knowledge, experience, and skills). Developing capabilities is for the consumer a matter of acquiring routines – persistent patterns of behavior. Capabilities in consumption consist of various routines that help in solving problems. They are analogous to the routines Nelson and Winter (1982) discuss in the context of production. The consumer acquires routines in order to utilize goods in the production of ultimate utility. We thus see consumption as a matter of learning about, choosing among, and creating routines.

Just as needs are hierarchical, so too are the routines used to satisfy needs. Routines operate at all levels of the hierarchy, those at one level affecting the operation of routines at lower

levels and assisting the consumer's choice among them. Routines help the consumer to solve problems at each level by classifying the information from lower levels and specifying a series of simpler subproblems.

Where do consumption routines come from? The consumer has the option either of learning about and choosing among already existing routines or of creating new ones. Some existing routines might be external to the consumer and available through markets. To meet clothing needs, for example, the consumer might simply hire a consultant who would then utilize his or her own existing routines to make decisions for the consumer. Alternatively, the consumer might acquire some of these routines through experience and exposure to social and cultural institutions. For example, the consumer might follow the current fashion or utilize institutionalized routines such as the meanings that colors generate about age and gender in a society.

In either case, the consumer must learn and acquire experience in order to consume successfully. The existence of bundles of routines that could help solve problems is of little help unless the consumer knows about them. To be able to hire a consultant, the consumer needs to search for available services, learn about their prices and quality, and get recommendations. Similarly, to be able to follow fashion, the consumer needs to read magazines, watch fashion shows, visit stores, and so on. Even though the consumer might have little to do with the creation of such routines, he or she still has to get involved in learning about them.

When existing routines are not satisfactory, the consumer might choose simply to create new routines of his or her own. The consumer may see existing routines as unsatisfactory for two interrelated reasons. On the one hand, the consumer may perceive that existing routines do not provide as much satisfaction as the possible (real or imagined) alternatives. Changes in technology or relative prices may have degraded the satisfaction once received from those existing routines or have opened up the possibility for greater satisfaction if new routines could be developed. On the other hand, as a number of writers (including Bianchi in this volume) have argued, consumers may seek novelty, and therefore engage in innovation, for its own sake. That is, novelty – a certain degree of variety in consumption over time – may be one of the fundamental requirements guiding the consumer's production activities. Just as satisfactions are not necessarily 'better obtained with the proceeds of work than in the process of work' (Loasby 1995: 477), so too satisfactions are not always better obtained in the fact of consumption than in the process of consumption. In general, the desire for a better set of consumption routines and the satisfactions of acquiring that better set work hand in hand, especially to the extent that the process of search is never extinguished by its own success.

When, then, markets or other institutions fail, for whatever reasons, to provide satisfactory or relevant routines, the consumer might create private regularities of behavior, especially if there are substantial benefits expected from scale economies at the individual level. In

clothing decisions, for example, the consumer might decide to create a distinct private style and purchase accordingly, rather than follow fashion or hire a consultant.

Each of these alternatives provides bundles of routines to assist the consumer's decisions, requiring the consumer either to learn about existing routines or to create new ones. But this also means that the consumer needs another set of higher-level routines to be able to choose among these bundles of (sub)routines. In a fast-changing environment, for example, higher-level routines might call for the selection of those bundles of lower-level routines that can respond quickly to change.<sup>3</sup> Higher level routines reflect the consumer's abilities to select and apply existing routines and to create new ones depending on specific needs and surrounding conditions. This point is also relevant to the issue of novelty. In our formulation the quest for novelty has a capabilities dimension as well as a tastes dimension. Thus consumers may possess varying capabilities for generating – or coping with – novelty. Moreover, novelty involves innovating (or, at any rate, switching among) routines and, as such, invokes a higher-level set of routines. And this may have implications for the boundaries between consumer and producer.

## COORDINATION AND STRUCTURE

As we saw, producers – firms – provide some of the routines necessary for consumption. Even when the consumer creates new personal routines, these might require using goods and services available in markets. Consumers have needs, and firms seek to meet them by providing access to routines. Acquiring routines thus requires the consumers to communicate with producers. Economic transaction becomes a matter of matching the needs and routines of consumers with the routines provided by producers.

Understanding the institutional structure of production and consumption thus requires more than just relaxing the assumption that productive knowledge is given. It requires also relaxing the assumption that the structure of production and transaction is given. In underscoring the specialized, idiosyncratic, and often tacit character of 'knowledge, skills, and experience,' the capabilities approach implies that agents do not automatically share 'common knowledge' of the structure of production and consumption, of the menu of choices available. The economic problem of production becomes a coordination problem: discovering – or, rather, helping to create – an interpersonally shared structure of transaction.

Just as conversation cannot take place without shared structures of meaning, transacting cannot take place in an institutional vacuum. In both cases, the problem of coordination is one of sharing structure. Meaning, indeed, is always a matter of structure. A signal – a piece

of information – is meaningful only in terms of some structure that can interpret it. Donald MacKay (1969) offers the image of a railroad switching yard in which the configuration of tracks and switches stands ready to direct the trains passing through it. By sending the right electronic signal (or, in older yards, by inserting the correct key in a switch-box) one can rearrange the configuration of tracks. The meaningfulness of a message thus depends on its form – on the shape of the key. That meaning consists in the change the message effects in the arrangement of the yard, the selection it makes from the set of all possible configurations. Moreover, as Kenneth Arrow (1974) reminds us, the structure necessary to understand or ‘decode’ a message entails investment in overhead costs. To function effectively in a foreign language, for example, we need to invest time and effort learning the language. The consumer, we will see, faces a similar problem.

We can make the same point from the perspective of routines and capabilities. The cognitive structure of an individual or of an organization (broadly understood) is determined by the hierarchical repertoire of routines the individual or organization has acquired over time (Langlois 1997). That cognitive structure in turn conditions which messages from the environment will register as meaningful.

It is a fundamental notion in linguistics that, although all languages reflect a similar deep structure of rules, each is in a sense an arbitrary assortment of symbols. This is because language is a highly abstract institution (Hayek 1967), one that can accommodate an infinite variety of concrete messages. The structure that governs communication – or transaction – between producer and consumer also obeys an underlying system of rules. But such a transaction structure is arguably far less arbitrary or abstract than language. This is so because in consumption the constraints and technology are different from those in language, and transaction is aimed at relatively more specific purposes, namely, the satisfaction of concrete consumer needs in light of institutional and technological possibilities.

As we suggested above, finding ways of producing ultimate utility for the consumer is a matter of hierarchical problem solving in which choices at higher or more abstract levels condition the choices that are possible at lower or more concrete levels. Drawing on traditions in the engineering literature, Clark (1985) calls these design hierarchies. For example, the French conceptualization of the early automobile as a locomotive without tracks led to a different set of subsequent design choices than did the American vision of the automobile as a carriage without horses (Langlois and Robertson 1989). Design is conditioned, however, not just by technological possibilities but by consumer ‘needs’ that we interpret here not just in terms of consumer preferences but also in terms of the consumer’s repertoire of routines, which in turn determines the hierarchy of design choices open to the consumer. The producer’s design problem involves not just figuring out what consumers want but also what consumers know how to do (or would be willing and able to learn how to do).<sup>4</sup>

Learning about consumer capabilities is a problem akin to the problem of learning about technology. The principal difference is that among the 'design choices' open to producers are those involving the teaching of consumers how to consume. The roles of producer and consumer are in fact symmetrical, in that we can also imagine consumers deciding to teach producers about producing. This possibility is well known in the case when the consumers are themselves industrial concerns 'consuming' intermediate goods from subcontractors (von Hippel 1988). But it can also occur in the case of final consumers. Hobbyists and sports amateurs, for example, are often sources of innovation in the gear they use.

### THE BOUNDARIES BETWEEN PRODUCERS AND CONSUMERS

What determines the boundaries between producers and consumers? That is, what determines the extent to which producers will provide the knowledge and routines that the consumer needs for successful consumption and the extent to which the consumer *soi-même* will provide them? Here the analogy between transacting and communication may be helpful. Consider the problem of coordinating with someone who (initially) speaks a different language or the problem of coordinating the 'interface' between two components that (initially) operate according to different principles or specifications. In either case, there is a number of ways to make the connection, all of which involve investment in an institutional structure.

One approach is simply to employ an intermediary who speaks both languages or a device that can convert from the principles or specification of one component to that of the other.<sup>5</sup> When the Americans and Russians wanted their spacecraft to dock in orbit, they had to construct a module that could accept the American craft at one end and the Russian at the other. This approach typically requires the least fixed investment, at least from the point of view of the transactors. (It may in fact require substantial fixed investment from the point of view of the translator, but that investment can often be spread over many different transactions with many different parties.)

If one or both of the transacting parties expects, however, that the transacting will be ongoing, it may pay for one party to invest in the translation function rather than employing a third party. The ultimate form of an institutionalized translation function is the emergence of common standards. One of the parties could decide to abandon its own language or specifications in favor of those of the partner. Or both parties could agree on a *lingua franca* different from either's original specifications.



We can think of the routines and capabilities of producers and consumers as two (potentially) different languages or systems of specifications. In the case of final consumption, this 'interface' problem is very often solved by the use of an intermediary or middleman. A consultant who chooses my computer hardware and software for me, assembles my wardrobe, or even coaches me on personal fitness is someone knowledgeable both about my wants and capabilities and about the capabilities of the producers of computers, clothes, or fitness equipment. For intermediaries to be effective, of course, they must be known to their customers: consumers must possess knowledge that such intermediaries exist and have the (perhaps relatively simple) capabilities to find and employ them. It is thus the case that intermediaries themselves internalize the capabilities necessary for consumers and producers to take advantage of their services. As Robertson (1994) puts it, such intermediaries are really entrepreneurs who connect those who have a problem in need of solution with those who have a solution in need of a problem.

It is possible, however, for either the producer or the consumer to internalize the translation (and entrepreneurial) function. A producer might bundle its goods with consultant services, as in the case of full-service computer shops, clothing stores, or fitness clubs. This requires the producers to be conversant with the routines of consumers – to be able to size up what Mr A needs in a computer or Ms B wants in a workout – while at the same time knowing their own hardware. Whether bundled or independent, however, the consultant function often has the unintended consequence of imparting new routines to the consumers in a way that may eventually render the consultancy obsolete. It is typical, for example, for producers to bundle consultancy services with their products when the products are new in society and then to abandon the function once knowledge of the technology becomes widespread.

Alternatively, the consumer might internalize the entrepreneurial translation function. This is typical of aficionados who, out of taste or necessity, explore the deeper reaches of the production process. In the simplest case, a consumer might happen to possess capabilities – acquired, perhaps, by poring over computer or fashion magazines for pleasure – that render unnecessary the hiring of a consultant. In many cases, however, the consumer is forced to internalize the consultant function by the inadequacy of existing consultant (or perhaps even of producer) capabilities. For example, hobbyists were terribly important in shaping the structure of the early microcomputer industry (Langlois 1992). These were largely final consumers – people who wanted their own computers for personal amusement. Not only did no consultancy services exist, but few of the necessary complementary capabilities existed on the market. So end users integrated backward into the production of many components.<sup>6</sup> And because these hobbyists did not possess the range of capabilities typical in large computer firms, each was forced to concentrate only on a small subset of complementary activities, which necessitated standardization and modularity in architecture to permit autonomous

innovation. In addition, the hobbyists banded together into user groups to share capabilities, teach one another, and circulate the latest information – a practice that had also been common at the dawn of the mainframe era (Fisher *et al.* 1983: 31–2).

This point underscores the importance of historical process in explaining the boundaries of the firm (Langlois and Robertson 1995) or, in this case, the boundaries between producers and consumers. Whether and to what extent functions will be internalized or left to the market will depend in significant part not on transaction costs in the abstract but on the changing distribution of capabilities in the economy.

Unlike the more general problem of explaining the boundaries of the firm, however, the problem of explaining the boundary between producers and consumers presents us with a useful asymmetry. If we mean by consumers final consumers – individuals and households – then those consumers will be necessarily limited in their production capabilities. This suggests that integration by the consumer will be limited to what we have called the consultant function and perhaps to small-scale production. Innovations in consumption routines that are driven by the consumers themselves will thus typically take the form of a recombination of existing possibilities – off-the-shelf artifacts and external capabilities available through the market – with perhaps some innovative behavioral patterns and routines. The consumer may be forced into small-scale production to fill gaps, but will likely hand off production (or will become a producer and cease being primarily a consumer) if the scale of operations involved becomes large. As we have suggested, this may imply that consumer-generated innovation may tend more than producer-generated innovation to result in modular systems, especially if the innovation is motivated by relatively pragmatic concerns rather than by the joys of innovating itself.

If consumers primarily seek novelty for its own sake – as in clothing, for example – then they would likely chafe at standards. On the other hand, modular systems are a kind of standard that actually facilitates the generation of novelty by reducing the costs of assembling a product to taste, at least within the bounds of compatible modules. In the clothing case, one can think of the Land's End catalogue as a kind of modular system that, by offering a varied assortment of mix-and-match clothing elements within a coordinated design paradigm (which some might describe as the preppy look), one can fine tune a wardrobe to one's taste with low transaction costs. But the avant-garde would regard even this vast array of modules as far too confining, and would insist not only on new modules but on new architectural configurations.<sup>7</sup> Such architectural innovation (Henderson and Clark 1990), however, requires a higher level of skill on the part of the innovator. Thus we tend to find such complex design activities as high fashion or domestic architecture delegated to specialists, who tend also to have internalized the function of communicating with their consumers.

The interaction among consumers and between consumers and producers might actually amplify the eventual effects of an initially small-scale innovation in consumption routines by some consumers. For example, if, as Bianchi argues, novelty is an argument in an individual's satisfaction function (or, in our terminology, is one of the consumer's abstract needs), then it follows that individuals differ from one another in terms of their desire for – and, as we have argued, their ability to manage – novelty. This difference in turn provides the setting for a trickle-down effect in the spread of innovation, and suggests a mechanism by which the cumulative effect of innovation can become quite large. Unsatisfied by the available routines, those who seek novelty the most will initiate an innovation using what is likely to be small-scale production. Other consumers will then learn about the new routines and imitate them according to their various tastes and capabilities for novelty. In a process long ago described by Leibenstein (1950), more and more consumers will jump on the bandwagon as the degree of novelty of the new routines, declining as more and more people hop aboard, reaches threshold levels. The decline in novelty will make the avant-garde jump off the bandwagon, of course; but if the distribution of novelty seeking in the population is appropriate, the cumulative effect can be large. In general, however, bandwagon effects of this sort will apply only to some new routines, and their importance will vary not only with the distribution of the proclivity for novelty but also with the technical characteristics of the new routines.

Note that it may not be economical at first for a producer to invest in large-scale provision of a new routine to the consumers, even if he or she knows about it. A new routine might thus continue to involve small-scale production by consumers if its adoption is confined to a narrow group. But as a popular innovation spreads among consumers, it might at some point become economical for a producer to invest in the necessary capabilities and engage in large-scale manufacture. When consumers initiate innovation, economies of scale may be the end result, but they are not the starting point.

By contrast, innovation initiated by producers may well be driven by economies of scale. In the view of Alfred Chandler (1977), the innovation of branded packaged goods in the nineteenth century was a way of taking advantage of economies of scale and scope in production and distribution. In the early part of that century, the consumer typically dealt with an intermediary – the keeper of the general store – who measured out units of bulk items and assured the quality of the goods. With the technological change and the lowering of transportation costs attendant on the development of the railroads, it became economical to process and subdivide many types of commodities centrally. This removed from the retailer the consultancy function, which was taken over by the manufacturer in the form of a recognizable brand that conveyed content information and guaranteed quality. This in turn required consumers to adapt, albeit without much trauma, to new consumption routines. Here too, however, the result may be thought of in terms of the emergence of standards. The creation

of the idea of a 'brand' standardized meanings for the consumer, who no longer needed to rely on the good offices of the grocer and could instead avail himself or herself of a more transparent 'interface' with the producer.

Indeed, one might argue that, over time, the emergence of standards will tend to crowd out entrepreneurial consultancy as a solution to the problem of consumer-producer communication, all other things equal. One of the *cetera* we must hold *paria* for this to be true, however, is income. It seems clear that rising incomes would militate in favor of increased use of outside consultancy in consumption. As income goes up, time becomes relatively more valuable. Consultancy - and the outsourcing of consumption and household production activities in general - is a way of economizing on time. Moreover, quality is a normal good, so increasing incomes will mean greater demand for non-standardized products that, because they involve idiosyncratic routines and specialized knowledge, require greater amounts of consultancy for their consumption. Also, on the production side, computerized and flexibly specialized manufacturing processes may make it possible to provide personalized commodities without great loss of scale economies.

Nonetheless, if we control for such factors, the extent of standards must increase over time. In the Marshallian long run, which allows for incremental innovations but not major discontinuities, we should expect transaction to become more routinized as producers and consumers learn more about each other and have time to adapt their routines to one another. We need only think of the old story about the prisoners who spent so many years in each other's company that they had numbered all the jokes they knew and could send one another into fits of laughter simply by calling out '21.' The translation function, and the internalization which it sometimes requires, may be a response to economic change rather than the result of any steady-state advantages it might have (Langlois and Robertson 1995).

## CONCLUSION

Consumers are active, not only because they may seek novelty or choose in an existential context, but also because they are in effect producers, who must actively organize their own consumption using the skills and routines they possess or can acquire. The boundaries between consumers and producers are permeable. They shift in response to entrepreneurial possibilities seized by consumers, producers, or both; and the pattern of change will be governed by the historical distribution of capabilities among consumers and producers and by the technological characteristics of the products involved.

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NOTES

1. For a broader critique of the Lancaster-Stigler-Becker approach, see Earl (1986: 33-41).
2. Williamson (1985) is perhaps the leading source here.
3. Which may mean having a simpler repertoire of routines or a repertoire of generalized rather than specialized routines (Heiner 1983; Langlois 1986a).
4. For many good reasons, neoclassical theory rejects the idea that producers somehow change the tastes of consumers. And, for many equally good reasons, critics have attacked neoclassical theory on exactly this ground. But the issue becomes less contentious if we see consumers as having 'needs' not in a sociological sense but in the sense of engineering design: the consumer has certain 'specifications' that comprise both tastes and capabilities. In this view, what may be changing (and what the producer can try to change) are the consumer's capabilities rather than his or her underlying tastes. The idea of changing preferences is problematical; but the idea that people can be taught or expected to learn and therefore that their capabilities might change is less problematical.
5. In the technological case, this would amount to what David and Bunn (1990) refer to as a 'gateway' technology.
6. Of course, these hobbyists also appreciated the process of fabrication for its own sake; but it's not clear to what extent the joys of assembly would have outweighed the desirability of a more powerful computer had one been available ready assembled from producers.
7. The avant-garde of the East Village, as against the Upper East Side, might, however, be content to assemble their own fashion from a set of modules that extends well beyond what is available in catalogues.

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