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VALUE-ADDED ACTIVITIES AS A RURAL DEVELOPMENT STRATEGY

David S. Kraybill and Thomas G. Johnson

Reverse cannot befall that fine Prosperity, Whose sources are interior.

Emily Dickinson

At least 22 states have established agricultural value-added programs to provide new employment opportunities in rural areas and to create additional demand for agricultural products (Greene, p. 15). These value-added programs are a subset of a broader range of state-sponsored economic development programs that attempt to alter the rate of regional economic growth by identifying and assisting local entrepreneurs, by establishing institutions for the commercialization of new technologies, and by creating non-traditional sources of business finance.

This paper focuses on the role of valueadded activities in rural economic growth and development. A definition of value-added is established, identifying a category of valueadded activities that may be enhanced by public investments that create an entrepreneurial climate. The conceptual relationship between entrepreneurship and regional growth is then examined. Examples of effective institutional support for value-added development are drawn from current programs in several states. The importance of incentives for collaboration between entrepreneurs and university researchers is emphasized. The paper concludes by outlining the elements of a value-added program that meets a broader set of rural development objectives than have been met in the past by business development programs.

THE CONCEPT OF VALUE-ADDED A Definition

Underlying any definition of value-added is an accounting stance providing an answer to the question: "Value-added from whose perspective?" In this section, three levels at which value-added is defined in the economics literature are identified. First, at the level of the firm, value-added is the difference between the sales of a firm and its purchases from all other firms. Second, at the level of the sector, value-added is the difference between the outside sales of a sector and its purchases from all other sectors.¹ Third, at the level of the geographical region, value-added is the difference between the outside sales of a region and its purchases from all other regions.²

In current rural policy discussions, the accounting stance generally adopted is that of the agricultural sector. For many areas, however, sectoral value-added is inappropriate as the basis for a viable rural development strategy. Less than one-third of jobs in nonmetro counties in the United States are in agriculturally related enterprises, defined to include farms, input firms, processing firms, and wholesale and retail firms (Hines et al.).

A region-based definition of value-added is most appropriate for rural development policy for three reasons. First, as emphasized by T.W. Schultz, many of the problems of agriculture "have their origin in the interrelationship between agriculture and the rest of the economy" (p. ix). Second, important parts of the

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[&]quot;Outside sales of a sector" is defined as sales to all other sectors.

² "Outside sales of a region" is defined as sales to all other regions.

rural economy are ignored if the focus of rural policy is sectoral. Third, governments are not sufficiently clairvoyant to be able to choose which industries and which firms can endure in a region (Castle; Mills).

For rural development policy, the following region-based definition of value-added is suggested: Any activity which increases the value of raw materials indigenous to a region.

Categories of Value-Added

Students of agricultural marketing learn that product transformation involves the adding of form value, place value, time value, and information value. Following Deaton and Johnson, each of these four classes is divided into traditional and innovative value-added activities (see Table 1).

The location of a traditional value-added activity, such as grain milling, is determined by regional comparative advantages. Such industries gravitate through equilibrating changes in economic rents to areas endowed with raw materials, labor, energy, output markets, or infrastructure. Firms in traditional value-added industries produce at the level of output where economic rents are zero. Conscious efforts to develop such an industry are often unsuccessful because a local area may not have sufficient cost advantages in production. When local recruitment of traditional industries is successful, firm location usually occurs at the expense of some nearby region; hence, regional expansion in traditional value-added industries generally represents a zero-sum contribution to national output.

In contrast, innovative value-added activities in a region bring gains which more than offset losses incurred in other regions. The products, resources, or technology in innovative industries are distinctly different from those of their closest substitutes. The value of one or more key inputs in innovative value-

added processes is raised considerably compared to its value in any alternative use. Risks tend to be greater, and, therefore, risk-management abilities are more vital to enterprise success in innovative activities than in traditional activities. Because of the level of risk, commercial loan financing is generally more difficult to obtain for innovative value-added activities; hence, nontraditional forms of financing are utilized.

Innovative value-added activities are a source of national growth through changes either in the kind of product or in the technology of production. The production possibilities surface of the nation is shifted outward when innovative value-added activities are established. On the other hand, establishment of traditional value-added activities generates little or no net change in the level of national output; rather, change occurs only in the geographical location of activities.

A Parable of Value-Added

Though it faces a consistently unfavorable press, moonshining is an industry that is exemplary for its extensive use of existing community resources. Moonshining represents an innovative value-added industry for several reasons. First, the product of the industry does not entirely displace production in other areas since moonshine is not a perfect substitute for any other beverage. Second, factors of production are organized in a distinctly different manner in the moonshiner's hillside shack than in commercial distilleries. Third, production of moonshine raises substantially the value of depreciated capital: radiators, barrels, pipe fittings and other plumbing accessories that had been abandoned prior to their employment in this industry. Asset revaluation occurs also in land: the Ricardian rent of remote mountain sites appreciates. Fourth, the risks involved in moonshine production are greater

TABLE 1: CLASSES OF VALUE-ADDED INDUSTRY

	Form	Place	Time	Information
Traditional	canneriesmeat packersgrain mills	wholesalingretailingfarmers' markets	cold storage grain elevators	• market reports
Innovative	 biotechnology waste product utilization recreation 	 mail order U-pick fruits and vegetables recreation farms direct marketing 	irradiationfreeze drying	electronic markets video auctions organic products

than in the production of most other beverages, and the risk-management requirements of the industry are commensurately greater. Fifth, few moonshiners have been known to receive commercial loan financing for the startup or expansion of their operations; financing is generally obtained from unconventional sources. Sixth, institutional arrangements for technical assistance in moonshining are not well established.

Moonshining exhibits several desirable characteristics that may be found in both innovative and traditional value-added industries. First, the dominant inputs, grain and water, are readily available in many rural areas. Second, the industry's demand for labor does not decline during the off-season of the crop cycle. Third, the processing activity can be integrated vertically with existing firms that produce the primary raw material. Thus, the economic unit producing the raw product benefits both from a higher price for the grain and from the profits from the processed product.

INNOVATION AS A SOURCE OF REGIONAL ECONOMIC GROWTH

In contrast to Adam Smith's idea that the division of labor is the primary source of economic growth, Jane Jacobs argues that "new work," that is, innovation in product and process, is the basis of productivity increase. Jacobs argues that the city is the locus of technological change in methods of production and that productivity increases during prehistoric times and during the industrial revolutions in Europe and Japan originated in urban areas and later emanated outward to less densely populated, rural areas. Jacobs' reasoning is that the city is the setting where the "old work" is most densely concentrated and is, therefore, the most fertile incubator for "new work."

The geographical element of Jacobs' theory of innovation overlooks the fact that rural-oriented "old work" is concentrated in geographic locations outside of cities. As a result, much innovation in agricultural technology in the United States was developed on farms or at agricultural experiment stations located in or adjacent to rural areas. Those who were developing the "new work" in agriculture at the land-grant universities generally had close ties to the "old work" through their childhood experiences, through the Cooperative Extension Service, and through their geographic

proximity to the countryside.

Today the link between old technology and new technology in rural areas can be fostered by the appropriate design of public policies for the transfer of technology. A critical policy issue in developing innovative value-added activities is the design of appropriate incentives to ensure that research efforts are directed to the problems faced by entrepreneurs and, further, to ensure that innovations are commercialized.

ROLE OF THE PUBLIC SECTOR IN VALUE-ADDED DEVELOPMENT The Rate of Economic Change as a Rural Policy Focus

Karl Polanyi suggests that in times of economic transition, costs of adjustment are directly related to the *rate* of change. Using the enclosure movement in England as an example, Polanyi asserts that upon this rate depended whether the unemployed

... could adjust themselves to changed conditions..., whether they would find new employment in the fields of opportunity indirectly connected with the change; and whether the effects of increased imports induced by increased exports would enable those who lost their employment through the change to find new sources of sustenance (pp. 36-37).

Following Polanyi, it is suggested that an appropriate role of public policy for rural areas is to "alter the rate of change, speeding it up or slowing it down" (p. 37) when factors of production are unemployed or underemployed in the process of structural change.

The speed of the current rural transition in the United States is reflected in the fact that nearly one-third of nonmetro counties had unemployment rates of 9 percent or more in 1986 (Economic Research Service, p. v). During the 1983-85 period, nearly half of all nonmetro counties lost population, with the greatest outmigration occurring in the Plains and the Western Corn Belt (p. vi). Within the agricultural sector, the rate of change has been particularly rapid. During the 1982–86 period, nonmetro employment in agriculture for the country as a whole declined at an average annual rate of 1.8 percent. Among regions, the drop in agricultural employment was the highest in the South, where the decline occurred at an average annual rate of 2.6 percent from 1982–86. An even higher rate of transition has occurred in mining, a rural-based sector in which nonmetro employment declined in the 1982-86 period at an average annual rate of 6.5 percent.

Creating Incentives for Innovation

Government can influence the rate of rural change in at least two ways: by providing public goods and by offering programs of business development. Public goods, including education, roads, utilities, and transport systems, are vital to rural growth (Capps et al., p. 464). Business development can be stimulated by value-added programs that institutionalize incentives for close collaboration between entrepreneurs and university researchers.³

The Ben Franklin Partnership, a program of entrepreneurial development in Pennsylvania, is an example of public policies providing incentives for close ties between entrepreneurs and researchers.⁴ Contracts sponsored by private firms for production-oriented research conducted by faculty members at universities and colleges throughout the state are matched by state funds. In its first four years, the Partnership matched funds of approximately 2,500 firms that sponsored research performed by more than 100 academic institutions in the state (Osborne, 1988, p. 43). During this time, state funds in the amount of \$77 million leveraged an additional research investment of \$281 million on the part of participating firms.

Incentives to encourage close ties between entrepreneurs and university researchers could be incorporated in value-added development programs targeted to rural areas. Programs that institutionalize such incentives could reduce the economic and social friction of space and could influence the rate of rural economic change just as experiment-station research has done historically in American agriculture.

Contributions of the Land-Grant University

The share of U.S. agricultural research di-

rected to post-harvest operations appears relatively small considering the fact that 69 percent of retail costs of food are accounted for by processing, marketing, and distribution (USDA, p. 53). According to Sundquist, only 18 percent of research expenditures of the U.S. Department of Agriculture (USDA) and the state agricultural experiment stations is allocated to post-harvest studies.

Whether the land-grant universities will respond to the changing needs of value-added industries remains an open question. More generally, Castle expresses doubt that the land-grant universities will respond to the broad economic needs of rural areas, unless "the traditional tie to agriculture is severed or at least severely weakened" (p. 24).

Value-added centers focusing on agricultural raw materials of individual states have been created at eight or more land-grant universities. The number of centers does not measure research or extension output, but it does indicate that the need for a new direction is recognized within the land-grant system.

Currently, the existing value-added centers depend primarily on state funding. An impediment to further state funding may exist if new product technology is easily transferred outside the state (Otto and Williams, p. 8). This free-rider problem may be reduced to some extent if the commercialization of state-sponsored research is directed toward small-and medium-sized companies that do not have national operations. In this manner, there is a greater likelihood that states will be able to capture economic rents accruing to their investments in value-added research.

Another solution to the free-rider problem of state funding is to direct a greater share of federal research monies downstream toward the processing and handling of raw materials. This approach poses its own set of problems, however. Efficiency in technological development appears to depend on close links between entrepreneurs and researchers. Under federal funding of value-added research, it may be difficult to devise ways of establishing links with entrepreneurs and at the same time

³In response to an earlier draft, Deborah Markley stressed that the appropriate role of states is to serve as a catalyst in creating an entrepreneurial environment. Most of the funding for production-related research and for the startup and expansion of small businesses will continue to come from private sources.

⁴The Partnership is valuable as a model of successful links between entrepreneurs and university researchers. It should be noted, however, that the program does not specifically target rural areas.

⁵ Value-added centers are located at land-grant universities in the following states: Illinois, Kansas, Iowa, Michigan, Mississippi, Nebraska, Texas, and Washington.

ensure that the results of the research are widely distributed. Technology-transfer policies established recently at a number of public and private universities now permit intellectual property rights to be granted for exclusive use by private commercial interests (University of Georgia). Many of the new technology-transfer policies permit a university and its researchers to take equity positions in private companies that utilize university-based research. It remains controversial, however, whether the public is well served by such arrangements.

A REVIEW OF STATE VALUE-ADDED PROGRAMS

The most comprehensive of the existing state value-added programs are founded on a three-way partnership between the state's department of agriculture, one or more universities in the state, and agribusiness firms. In some cases, state departments of commerce and the Cooperative Extension Service are also involved. Three diverse value-added programs in the states of Texas, Illinois, and Mississippi are reviewed in this section.

The Texas example illustrates a program that focuses on vertical integration of processing activities with the farm or ranch on which the raw materials are produced. The Agricultural Development Program, sponsored by the Texas Department of Agriculture, is a broad program of agricultural diversification designed to facilitate both production of alternative crops and processing of raw agricultural products.

Between 1983 and 1986, the Agricultural Development Program assisted more than 40 value-added enterprises involving rice drying, wheat milling, beef slaughtering, vegetable packing, and honey refining (Texas Department of Agriculture, p. 41). These projects were estimated to generate annual sales of \$400 million and to create more than 3,600 new jobs.

The Texas program assists new and expanding businesses by providing technical assistance, by conducting market surveys and feasibility studies, and by identifying traditional and nontraditional sources of finance. The financing packages which have been put together for value-added enterprises draw upon a wide range of sources: commercial banks, tax-exempt bonds issued by local agricultural development corporations, the Farm-

ers Home Administration, the Economic Development Association, the Small Business Administration, and various other state and federal programs.

To expand production in entrepreneurial firms both in agriculturally related and other sectors, the Texas legislature has passed a resolution to establish a \$250 million pool of venture and small-business capital drawing on state pension funds (p. 60). The portfolio of this investment pool will be diversified: 10 percent will be allocated to high-risk equity investments in enterprises including agribusinesses, 50 percent will be allocated to lower-risk small businesses, and 40 percent will be allocated to guaranteed investments.

An example of a value-added enterprise assisted by the Agricultural Development Program in Texas is a cucumber processing plant in the city of La Villa. In 1986, the state Department of Agriculture assisted GAT, Inc., a firm owned and operated by several vegetable farmers, to acquire financing for a plant. Unemployment rates were exceptionally high in the area, and the city government provided a low-interest loan to GAT to assist it in creating new employment. Currently, employment in the plant ranges between 50 and 150, varying by season of the year (National Center for Small Communities, p. 23).

The Illinois value-added initiative is part of a broad agricultural diversification program involving numerous agencies of the state government including the Department of Agriculture, the Department of Commerce and Community Affairs, the University of Illinois, and the Governor's Rural Affairs Council (Greene, p.3). Fostering development of new technologies has been a key element of the Illinois program. In 1986, the state legislature established the Center for Agricultural Value-Added Research in the College of Agriculture at Urbana-Champaign. This center coordinates research on new products and processes that expand the market for the state's agricultural raw products.

Perhaps the most important feature of the Illinois program is the combination of the research center with a business incubator, also sponsored by the College of Agriculture. The incubator will provide start-up facilities for 10 agribusiness firms that will commercialize research conducted within the university setting. An example of an incubator venture currently underway is the development of a process to blend corn starches with petroleum polymers to produce plastics (Greene, p. 6).

Complementing the research center and the agribusiness incubator in Illinois are several state programs of small-business finance.

The Mississippi value-added program began in 1974 when the Cooperative Extension Service established the Mississippi Food and Fiber Center at Mississippi State University. This center has a staff of business-development specialists. In addition to its own staff, the center utilizes personnel from throughout the university and from state agencies. Assistance has been provided to firms processing a wide range of raw materials, including agricultural, marine, aquacultural, and forestry products (Moore, p. 20).

Until two years ago, the Mississippi center focused much of its attention on the catfish industry. Eleven major feasibility studies led to the establishment of four catfish-processing plants involving a capital investment of approximately \$26.0 million and 1,500 new jobs (McGilberry, 1987a, p. 2). Since 1986, the center has focused on the specialty food industry. As a result of this emphasis, 25 producers have formed the Mississippi Specialty Foods Association to coordinate market development (Moore, p. 22).

The Food and Fiber Center has developed an effective approach to value-added development that might be called "industrial extension"—or more precisely "agri-industrial extension." An extension-oriented program of value-added development appears to be a sound investment in a state where approximately 45 percent of total manufacturing employment is in agribusinesses (McGilberry, 1987b, p. 2).

Each of the aforementioned state programs has a distinctive focus: in Texas, vertical integration of producing and processing operations; in Illinois, an emphasis on new technologies and an incubator to house production operations in the early phase; in Mississippi, an extension approach.

CAN RURAL DEVELOPMENT OBJECTIVES BE MET THROUGH VALUE-ADDED ACTIVITIES?

According to Pulver, a comprehensive rural development policy includes objectives relating to the farm sector, the nonfarm sector, and the intersectoral transition of human and other resources. A strategy to facilitate the creation of value-added activities can con-

stitute an important part of a broad rural development policy. It is not suggested, however, that a full range of rural development objectives can be met by value-added initiatives. Brady Deaton argues that "responsible public policy should view rural development as the process of making a publicly prescribed minimum level of services available on a reasonably uniform basis" (p. 2). Value-added strategies can provide only a subset of the services to which Deaton refers.

While a value-added strategy is no substitute for a broad program of rural development, designing value-added programs that achieve a wider set of objectives than business development programs have typically achieved in the past may be possible. Consider the example of an innovative private-sector inititative begun in the small, rural town of Arkadelphia, Arkansas, in 1986 (Wessell and Kotlowitz; Southern Development Bancorporation). The Southern Development Bancorporation is a private bankholding company that provides commercial banking services in a rural setting while sponsoring numerous economic development programs. Under its holding-company umbrella, the bank includes: (1) a venture capital company that makes equity investments in locally owned companies, (2) a real estate company that will sponsor business incubators, (3) a seed-capital fund to stimulate business formation by local entrepreneurs through initial investments in product and market development, and (4) a revolving fund, making small short-term loans to low-income rural residents who wish to be self-employed. The primary commercial activity of the bank, the provision of small-business loans, will be facilitated by "enterprise agents" hired by the bank to work closely with small firms to ensure that an appropriate package of financing, market development, and technical capability is assembled (Osborne, 1987, p. 69).

Can this unusual rural financial venture maintain both its breadth of development services and its fiduciary responsibility to its depositors and investors? The Arkansas experiment is patterned after a bankholding corporation which has provided a similar range of community development and commercial banking services in a low-income neighborhood of Chicago for 15 years. Richard Taub of the University of Chicago finds that the innercity bank, after which the bank in rural Ark-

⁶ Deaton attributes this definition to J. Paxton Marshall.

adelphia is patterned, succeeds because it has reversed the flow of community resources (p. 137).

No hypotheses can be tested on a sample of two, but the Chicago and Arkansas experiments point the way to rural development through entrepreneurial value-added activities. A fairly broad range of development objectives may be attainable through value-added activities built upon innovative institutions that emphasize the critical function of the entrepreneur and that regard entrepreneurship as a process of learning rather than as an endowment which can be acquired (or forfeited) only through spatial mobility.

ELEMENTS OF A BROAD VALUE-ADDED PROGRAM

The social benefits from value-added research depend upon the efficiency of institutional arrangements linking researchers and extension specialists with entrepreneurs. These institutional arrangements determine the capacity of public policy to alter the rate of change of rural economies so that markets can absorb a greater share of the resources that are currently idled or undervalued. Following is an outline of the key elements of a value-added program that can contribute significantly to the achievement of broad rural development objectives.

1. Close Ties Between State Government and Universities. Following Deaton and Johnson (p. 8), the importance of broad financial, political, and technical support within the public sectors is emphasized. State departments of agriculture are increasingly playing an aggressive role in the growth of agriculture and related businesses (Nothdurft, p. 1), and in some states, they may be well situated to take the lead in an integrated valueadded program. State departments of commerce and other state agencies also should be included in the planning and implementation stages. Land-grant universities and other academic institutions will play an important role both in research and extension efforts.7 In addition, community and regional development organizations may play an effective role in creating a supportive environment for business development and expansion (Reid, p. 322).

2. Entrepreneurial Development. Perhaps the dominant theme in current state economic development policies—outside of ag-

riculture and related industries—is the creation of an entrepreneurial climate. Whether a firm is involved in "old work" or "new work" to use the terminology of Jacobs-the quality of managerial ability is critical to success. Value-added programs should be built on the premise that entrepreneurship is a resource that can be developed by appropriately designed methods of teaching. In most cases, such teaching must be adapted to specific needs of firms; this requires staff who are highly skilled and experienced. The screening of business plans provides an opportunity for training in entrepreneurship. A value-added program providing financial assistance can make such assistance conditional upon approval of a firm's business plan. In refining the business plan, the firm's managers would work closely with the expert staff of the program.

In addition to increasing the supply of entrepreneurs, entrepreneurial training can increase the availability of loanable funds in rural areas. The careful scrutiny and training activity provided by a value-added program may reduce the risk-in-lending perceived by banks and other financial institutions.

A promising approach to entrepreneurial development for some rural area is the business incubator. In addition to housing small businesses in their initial phase, incubators often provide managerial, marketing, and financial assistance; clerical and janitorial services; and venture capital (Webster, p.138).

3. Entrepreneur-driven Research. Early involvement of potential commercial users is critical for the success of value-added research. In the words of Jane Jacobs, "the logic of process is supplied by the person who is adding the new work" (p. 60).

Value-added programs can increase the volume of entrepreneur-driven research through matching grants in which the provision of public funds is conditional upon a corresponding investment by the target firm. Such an arrangement leverages public research monies through incentives for private-sector research investment. State programs of business development, such as the Ben Franklin Partnership in Pennsylvania, appear to utilize matching grants quite effectively, even with relatively small firms. Value-added programs could be strengthened by a similar approach to the organization and funding of research.

⁷ However, a university may not be well suited to serve as an umbrella organization to coordinate a value-added program.

4. Nontraditional Forms of Finance. Markley (p. vi) finds that research on rural capital availability is inconclusive, despite the general perception that rural businesses are subject to higher levels of risk than urban businesses. In addition to possible shortages of loan capital, rural businesses seldom have access to equity capital markets.

Most existing state value-added programs assist firms in packaging financing from several sources including federal business development loan programs (SBA,FmHA, etc.) and similar state programs. In addition, several nontraditional types of finance are used. One option involves linked deposits; these permit the state treasury to purchase certificates of deposit from commercial banks, which then make loans to qualifying value-added firms. Taxable bonds backed by state and private guarantees are another financing option. Venture capital funds have been proposed in several states as a source of funding for value-added enterprises (Deaton and Johnson, p. 6; Texas Department of Agriculture, p. 60). Venture capital funds established for general business investment in some states have channeled funds from a wide range of sources, including state public pension funds, private corporations, philanthropic foundations, and other sources. As noted above, matching research grants can be an effective means of providing financial assistance for technological research. An alternative to the matching grant is the seed-capital fund to provide new firms with the means to develop an innovative product or production process to the point where outside investment funds can be attracted, or to the point where production can begin on a small scale.

5. Market Development. In addition to conducting marketing studies and demand analyses, a number of value-added programs are actively assisting individual producers to pursue buyers in new markets. Such involvement is particularly valuable in the

export market, where producers often lack experience.

6. Broad Product Scope. Many opportunities in rural communities are found in nonagricultural rural sectors, including forestry, aquaculture, and outdoor recreation. In some rural communities, the most viable value-added products may involve the provision of amenity-related services, such as lodging and hunting. To meet the needs of rural producers, value-added programs should support a broad range of products, not merely those that are agriculturally related.

CONCLUSION

Industrial recruitment was the dominant economic development strategy in the South for many years (Cobb). Today, however, there is less enthusiasm for industrial recruitment. Many communities have been unsuccessful in their recruitment efforts or have been disappointed by the outcome of plant locations. A strategy of value-added development, based on available human and material resources, represents a viable alternative to industrial recruitment for some rural communities.⁸

Caution is urged, however, in the design of value-added programs. These programs, like other economic development efforts, are not immune from the hazards of showcase politics—the public sector equivalent of "conspicuous consumption." The danger is not so much in overgeneralization concerning favored products—fireplace logs from oat straw. for example—but rather in the tendency to invest in tangible facilities such as centers and incubators without establishing the intangible institutions and linkages that serve as the foundation of rural development. Value-added strategies become rural development when they move beyond the narrow confines of research laboratories to broad programs of entrepreneurship containing a balanced combination of management, marketing, technical innovation, and business finance.

^{*}Despite a policy shift toward local business development strategies in a number of states, branch plants remain an important source of growth for *some* rural communities. This point was emphasized by Herman Bluestone, Kevin McNamara, and Norman Reid in their comments on an earlier draft.

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