Anne L. Schneider

Pasteur's quadrant is offered as an idea for escaping from the dysfunctional dichotomy of "applied" vs. "basic" research and the stigma that each attaches to the other. By focusing on relevant research—research that is inspired by the needs of the community or society, but draws on or creates appropriate theory—universities may be able to alter the research agenda of faculty so that the total contribution of university research to the community is significantly greater.

Pasteur's Quadrant: A Framework for Designing Reward Strategies to Enhance Public Service in Public Universities

There is a certain irony in the legitimacy crisis currently confronting higher education in the United States. This is the country that introduced to the world the idea that free public education—available to all in even the most remote areas—is central to a democratic society. This is the country where land-grant colleges, technical institutes, and even private universities such as the University of Chicago were founded on the principle that higher education should serve the interests of the larger community and offer affordable, relevant education to ordinary people, including farmers and industrial workers. This is the country that opened teachers' colleges to ensure that grade schools and high schools would have enough qualified people to serve as teachers. In a most fundamental way, this is the country that partially based higher education on service to society for all those who could benefit from it rather than on "knowledge as an end itself" for children of the elites who had the cultural background to appreciate it.

Even with these traditions, universities in the United States, as seems to be true all over the world, take more pride in their research accomplishments than in their teaching or service. While much has been said over the past decade about the importance of returning teaching

to its central role in university life, it has been only during the past few years that much has been said within the academy about the public service role of public universities (Crosson, 1983; Lynton, 1995; Reardon, 1995; Rubin, 1995; Thurber, 1995; Cummings, 1998).

Recent federal and private foundation initiatives are extending the reform agenda to incorporate an enhanced public service role. Examples include the Community Outreach Partnership Centers (COPC) projects from the U.S. Department of Housing and Urban Development; the U.S. Department of Education Urban Community Service (Title XI) projects, and the National Science Foundation Urban Research initiative. In the private sector, the Kellogg Foundation has funded a presidential commission on the future of state and land-grant universities that is addressing this issue under the title of the "engaged university." The "engaged university" is an institution that recognizes a special responsibility for addressing the most pressing contemporary issues through its research, service, and instruction.

The purpose of this paper is to offer a framework and set of strategies designed to increase the centrality of scholarship associated with public service within metropolitan (urban) universities. Even though there are several kinds of public service—including research-based projects, training, technical assistance, internships, and service learning—I will focus mainly on research-based public service activities in which a faculty member carries out a research project with or for a community-based group or organization on a topic of interest to it, with the intent that the results will be relevant and usable to the community-based group.

Cultural Change

To dramatically increase the amount and quality of public service within urban universities will almost certainly require a cultural change, not simply changes in written policies. Studies of public policy tell us that written policies sometimes come after fundamental philosophical or cultural change has taken place, and simply encode the current beliefs in formal written policies. In other cases written policies are initially counter to current practices and beliefs, but gradually, through the force of persuasion, incentives, or sanctions, yield fundamental change. We are all aware of situations in which there are numerous rules in place, ample incentives or disincentives, and genuine attempts at enforcement, yet nothing changes. It is very hard to get people to do something they don't want to do. Many universities already have written policies and procedures that mandate the centrality of public/community service in faculty work, and that appear to insist that public service be rewarded.

At Arizona State University, for example, several different types of service are recognized (ACD 506-07) including "...quality of service to the [academic] profession, to the university, and to the community (local, state, and national or international)." However, special attention is given to public service in tenure and promotion decisions (ACD 506-07):

> Service to the university includes the individual's expected contribution to internal committee work, faculty governance activities, and the preservation of a collegial atmosphere at all levels of interac-

tion within the university. *For promotion and tenure, exceptional quality of service should be assessed primarily in relation to service to the public and should be basically an extension of the faculty member's research and teaching activity to the larger community outside the university.* For performance pay considerations, outstanding service to the department, college, university, and profession, as well as public service, must be encouraged and rewarded. Evaluation of service requires the assessment of quality as well as quantity. [Italics added].

This article focuses on one form of public service—research or creative projects that encompass a topic of high public priority and are clearly relevant to community and societal needs. The other primary forms of public service (training, technical assistance, internships, and service learning) are more an extension of teaching than of research, and strategies to increase their prominence are somewhat different.

The fundamental premise of this approach is that we need to change faculty research agendas so that a dramatically greater percentage of faculty research work is relevant to the needs of the community and society. Studies of this type are at least potentially publishable in acceptable academic outlets. We can approach strategies to increase the relevance of research from three levels:

- A new framework that enables faculty to escape from the dysfunctional dichotomy of basic vs. applied research;
- Changes in incentive systems at both the local and national (disciplinary) levels;
- A leadership strategy to engage faculty in discussion and eventual change in the role of public service.

An Alternative Framework: Pasteur's Quadrant

Faculty work is strongly influenced by the prestige granted to activities that can be called basic research and the lower importance given to applied research. Although these terms are socially constructed and capable of any number of different understandings, many faculty genuinely believe that only basic research makes true contributions to knowledge, and applied research does not. Some faculty have stigmatized applied research to the point that those who do it are viewed as "academics for hire" who "find" whatever the funding source wants found. Some applied researchers hold similar views of basic research—accusing those who do it as being engaged in trivial and esoteric enterprises. The motives of basic researchers have also been called into question with accusations that they are too interested in career advancement and in pursuing the latest fads in research, with findings skewed toward those most likely to be published in leading journals.

A potentially useful framework to replace this dysfunctional dichotomy can be crafted from the ideas developed by Donald Stokes (1997) in which he describes a form of science and technology that is "use inspired." Pasteur's quadrant is the term Stokes gave to research that is undertaken because there is a need or use for it, but that

also contributes significantly in the development of theory. In the social sciences, the issues are not so much whether there is some technological application of scientific findings, but rather whether the results of basic social scientific research are relevant to society and whether the results of applied research are relevant for theory. Relevant research, as defined here, consists of studies that are relevant to both theory and to practice (see Figure 1).

Figure 1.

		Is the Research Relevant to Community/Society Needs?	
		Yes	**No**
Is the Research Theoretically Rich?	**Yes**	Relevant Research (to theory and practice)	Basic Research
	No	Applied Research	Investigator Curiosity

Drawn from the work of Donald Stokes and his "use-inspired" framework for understanding the connections between technology and science. Stokes, D., *Pasteur's Quadrant* (Washington, DC: Brookings, 1997).

The horizontal axis represents the degree of relevance to the needs (interests) of the community, society, or appropriate constituency—depending on the discipline. The vertical axis represents the relevance to theory and to cumulative knowledge. Pure basic research is that which is theoretically rich, but has little or no relevance to high priority societal needs and is not undertaken with any intention of being relevant. No one in the community is involved; no one is consulted; the research products are not written for the lay audience; and it is unlikely lay audiences will ever find any use for the work.

Pure applied research is typically inspired by a topic drawn directly from the community or society, and it is not guided by any recognizable body of theory, nor are its findings related back to any explicit theory. Applied projects involve community partners and the topic is one they have identified as important for their own needs. The community constituency is the primary intended recipient audience, and the topic is defined within the community itself. In the top left-hand cell is research relevant both to theory and practice. These projects involve topics or issues defined or chosen within the public/community sector, but the research is guided by one or more bodies of theory (or literature), and the underlying philosophical or methodological premises are made more explicit. There are also one or more theories to which the findings can be related, thereby contributing to the broader body of knowledge. This interactive relationship

should contribute to an improved project—provided that the researcher does not replace community interests with theoretical ones—but it also permits the project itself to improve theory. Topics drawn from the community do not always have a very good fit with any one theory, and the researcher may need to take a much more eclectic approach to theory as well as to methodologies when conducting relevant research.

It is important to stress that this conceptualization of relevant research is not to be confused with research projects derived from deductive theory for which the investigator proposes some "possible" relevance. Work that truly belongs in the upper left-hand corner of Figure 1 has real applicability, as defined and understood by those for or with whom it is conducted, and the researcher has not redefined the topic to provide a better fit with theory.

In the bottom right-hand cell are projects that are not theoretically driven and that have no community or publicly defined relevance, which might include investigator-initiated curiosity projects and purely methodological work. Such projects are not unimportant and should not be dismissed out of hand—ideas for theory and ideas on how to frame applied problems may well come from just this sort of creative enterprise.

All forms of research are important; and not all should cluster in the relevance category. There will always be a need for theoretically-driven research, just as there will always be a need for applied work. The former is justified on the grounds of improved theory and knowledge that at some point in the future may be valuable to society. Applied work must always be undertaken, because, as noted below, it is not always possible to find any theories that are suitable, even though the need for the research is obvious.

The amount of relevant research conducted at a university can be increased either by finding theories to use in conjunction with community-selected topics; or by applying theories to issues that have a higher priority in the community.

Applied research can actually be moved in the direction of relevant research either by a more eclectic approach to theoretical knowledge by applied researchers and/or by the development of better theories. Often the applied researcher has not abandoned theoretical thinking out of ignorance or obstreperousness, but simply because there are no theories that can be used without serious disregard for the characteristics of the community-inspired topic. Sometimes there are no methodologies that are suitable, and new ones have to be invented. Social science theories typically are developed over several decades and, even though they may become increasingly applicable to the issues of the past, they become increasingly inapplicable and irrelevant for contemporary issues.

Society changes in unexpected directions, and deductive theory may be too inflexible to incorporate such changes—especially when the research agenda is drawn from the theory itself rather than from the high priority needs of the society. Researchers who focus their research agenda on contemporary issues need to be broadly trained in theoretical and methodological perspectives so that they can approach both from an eclectic perspective—using theoretical ideas that "make sense" in conjunction with their topic, or by inventing new theoretical perspectives. Applied research can also be made more relevant to theory through the assistance of translators—persons who can

move between the basic and applied worlds and help their less theoretically inventive colleagues find or create the theoretical linkages that will not only improve applied research, but contribute to the cumulative knowledge of contemporary social issues.

To move basic research toward relevant research we need systematic ways to educate faculty about the high priority needs of the society, and we need strategies to teach them how to do work with and on behalf of their nonacademic partners. In an urban university, we need to introduce faculty systematically to the community networks and individuals who can articulate community needs, and we need "translators" who can then help faculty seek out a connection between theories, methods, or substantive questions that interest them and those high priority community needs. Sometimes faculty simply have no idea what kind of research agenda could be created from a solid review of societal needs, or they may not be able to see any intersections between those needs and anything they are able to do or are interested in doing. Sometimes faculty are so caught up in deductive theorizing or intellectualizing that they fail to notice the utter inapplicability of those theories to the contemporary or future issues of society. Theories tend to move forward in a linear logical fashion, whereas the world is generally not linear or logical. Theory, then, falls behind. What is important here is that we help faculty develop relationships with people in the community that are personal, enjoyable, reciprocal (each learns from the other), and that can be sustained over time so that, as the community/societal needs change, the faculty research agenda can change accordingly.

Experiences with community-oriented research have shown that some faculty simply do not know how to do this kind of work, and can be quite insensitive to the perspectives of the community partners. The rhetoric of participatory action research needs to be incorporated into all community-oriented work, so that the research is intended to be useful to the community partners or society as a whole, not simply to the career advancement of the faculty member. It is more difficult than anticipated to gain the confidence of communities who, in the past, have been the literal guinea pigs for social science. As pointed out in the final report from ASU's COPC grant, it takes a great deal of "sweat equity" to gain the confidence of the community, and many faculty were totally unprepared for the importance of putting their time in on community projects only marginally related, if at all, to the research (Kornreich and Melnick, 1998). Yet without this sort of cooperative work, community confidence may never be obtained.

Faculty Motivations

In addition to building the capacity for research relevant to both theory and practice, attention has to be given to the motivations of faculty. There is an unfortunate tendency at times to think much too narrowly and too locally about faculty incentives. Much of faculty work is driven by intrinsic motivations to do interesting work, to have an impact on society, to be respected by their national disciplines, and to have an impact on disciplinary or interdisciplinary knowledge. Narrow-gauge "token economies" are not likely to have any long-lasting effects.

Faculty reward structures are heavily and nationally oriented toward recognition from one's peers for innovative, cutting-edge research. Major steps forward in encour-

aging relevant research will be found only in national disciplinary associations and national funding sources have a much more prominent place within national conventions and journals for relevant research that is conducted locally but linked to legitimate theoretical inquiry.

Leadership from faculty in major Research I universities, and from the new generations of academics trained at the best universities, may begin to make a difference. Local incentive systems can provide encouragement in this direction, and small grant programs can be used very effectively to recruit faculty toward topics that are more conducive to relevant research and can even require community-based partnerships. At ASU, two very large federal grants, one from the U.S. Department of Education and one from HUD, in its urban initiative were used (among other things) to provide small to medium-sized grants to about twenty-five different people over a three-year time period to carry out research on high priority urban topics.

A similar strategy is now being used from a million-plus Kellogg grant to initiate a nonprofit center, and the university has developed an in-house small grant program that requires a community component. ASU's Center for Urban Studies—soon to be the Center for Urban Inquiry—allocates about $35,000 per year in small grants of this type. These all require a community partner and must be on a topic of wide concern to a public/community constituency. A conscious effort to bring in outside resources for discussions with nonprofit grant recipients is being contemplated to help identify theoretical linkages for the nonprofit grants, where theory is quite undeveloped, and where theory is developed.

Leadership Strategies and Practical Considerations

In addition to allocation of internal or federal funds for relevant research, persons in leadership positions with the university can take some other practical steps to encourage public service scholarship. For example, department chairs and deans could begin with an audit of the evaluation results in the annual performance reviews of faculty and in the tenure and promotion files which would involve several components. First, how do faculty present or describe their public and community service activities? What is the basic unit of analysis for public service projects? Are these projects simply listed under publications, if any publications ensued, or are the products listed as technical reports? Is there any information that would enable the reader to know that the project had a community partner? Is it possible to distinguish public/community service from other kinds?

What should the basic unit of analysis for evaluating public service be? Public or community service needs some identifiable parameters for evaluation, just as research is evaluated by articles or books, and classes by classes taught (syllabi, student evaluations). The appropriate unit for public service probably is the project itself, along with at least one written product that culminated from it, such as a published report, a technical report for the community group, or the written materials from a presentation. In addition, letters of appreciation from the community group, newspaper articles about the project, and any other similar material could be submitted as part of the public service portfolio.

Conclusion

There is much to be gained from increasing the amount of academic research that is relevant both to theory and practice. I would not contend that all research should fit into this category, nor would I argue that relevant research should be privileged over other kinds. On the other hand, there is a serious overbalance at this time toward theoretical research that is not relevant to society. Further, applied research that may be on the cutting edge in terms of community relevance should be brought under the umbrella of theory sooner rather than later, as is too often the case. Sometimes, of course, there is no theory that is applicable to a high priority community problem, and the researcher must and should go ahead with the applied-only framework. This problem speaks only to the paucity of theory in the social sciences, however, and to the need for persons acquainted with many different kinds of theories to help find a theoretical context that can enrich the applied study, which, in turn, can be linked to contributing cumulative knowledge in the field. In my own experience, the greatest contributions I have made to theoretical work have come directly from being confronted with an "applied" topic or project and then having to search (fruitlessly) for appropriate theories or methods. In some cases a full decade has elapsed before enough other applied researchers have wrestled with the problem that some theoretical context could be identified. I have personally spent a great deal of time trying to create better theories of politics and public policy so that research that clearly serves a public interest and is therefore clearly a form of public service will be able to draw from and contribute to political, policy, and democratic theory.

The specific suggestions offered here are that we need faculty who know what topics are relevant to society; intellectually respectable theories and methodologies that will be appropriate for topics that are socially relevant; a different way of conceptualizing applied and basic research; change in the way national disciplines, conferences, and journals value research conducted in conjunction with community partners on topics of local concern; incentive strategies to alter the research agenda of faculty and change the criteria by which they decide what is important; and leadership strategies to incorporate public service more comfortably into the evaluation processes.

Suggested Readings

Barber, Benjamin R., and Richard Battistoni (1993), "A Season of Service: Introducing Service Learning into the Liberal Arts Curriculum," *Political Science and Politics 16* (June, 1993): 235-240.

Crosson, Patricia, *Public Service in Higher Education: ASHA-ERIC Higher Education Report* (Washington, DC: Association for the Study of Higher Education, 1983).

Cummings, William K., "The Service University Movement in the U.S.: Searching for Momentum," *Higher Education 35* (1998): 69-90.

Kennedy, Marie, and Molly Mead, "Serving in One's Own Community: Taking a Second Look at Our Assumptions about Community Service Education." *Metropolitan Universities* (Summer, 1996): 99-111.

Kornreich, Toby, and Rob Melnick, *Reaching Out to Neighborhoods: Communities and Universities Working Together* (Tempe, AZ: Morrison Institute for Public Policy, Arizona State University, 1998).

Lynton, Ernest A., *Making the Case for Professional Service* (Washington, DC: American Association for Higher Education, 1995).

McCall, Robert B., "The Concept and Practice of Education, Research, and Public Service in University Psychology Departments," *American Psychologist* (April, 1996): 379-388.

Reardon, Kenneth, "Creating a Community/University Partnership that Works: The Case of the East St. Louis Action Research Project," *Metropolitan Universities 5* (Spring, 1995): 47-60.

Rubin, Sharon G., "Service Learning: Education for Democracy," *Liberal Education 76* (May 1, 1990): 12-17.

Rubin, Victor, "Evolution of a Campus/Community Partnership: The University-Oakland Metropolitan Forum," *Metropolitan Universities 5* (Spring, 1995): 27-36.

Schall, Ellen, "APPAM: Learning to Love the Swamp: Reshaping Education for Public Service," *Journal of Policy Analysis and Management 14* (Spring, 1995): 202-221.

Stokes, Donald, *Pasteur's Quadrant* (Washington, DC: Brookings, 1997).

Thurber, John P., "The Trenton Office of Policy Studies: Building Municipal-Collegiate Partnerships for Urban Revitalization," *Metropolitan Universities 5* (Spring 1995): 37-46.

Metropolitan Universities
An International Forum

Order Form

Name _____ Title _____

Institution _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____ Date _____

Type of Order

Individual subscription: Individual orders must be paid with your personal check.

☐   1 year, $30.00   ☐   2 years, $55.00   ☐   3 years, $75.00

Institutional subscription: (Fed ID number for institutional orders: 52-600-2033)

☐   1 year, $68.00   ☐   2 years, $120.00   ☐   3 years, $156.00

•   For subscriptions outside the U.S., add $22 for surface mail, $42 for air mail.

Back Issues:

☐   Institutional Rate $22.00 per issue   ☐   Individual Rate $11.00 per issue

Qty___Vol___No___   Qty___Vol___No___   Qty___Vol___No___

Payment Options

Payment may be made by charge, check drawn on a U.S. bank, or international money order. To qualify for individual rate, orders MUST be paid with your personal check or individual credit card.

☐   A check or money order is enclosed, made payable to Towson University, *Metropolitan Universities* Journal. MD residents add 5% sales tax.

☐   Please bill my credit card account: ☐ VISA   ☐ MasterCard
                                           ☐ Discover

Account Number _____ Exp.Date _____

Name (please print) _____

Signature _____

Mailing address: *Metropolitan Universities,* Towson University, 7800 York Road, Suite 301, Towson, MD 21252-0001.