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The integration of rural development research and community service

The integration of community service and research is an important subject especially in South Africa, where academics are called upon by the government and the public to contribute to more rapid and equitable development and, particularly for purposes of this contribution, rural development. The generation and application of knowledge should go hand in hand because the process of applying knowledge to real-world situations can itself provide productive challenges and venues for adding to the body of available knowledge. Those concerned with advancing science should appreciate that the knowledge gained in this way has been validated, under realistic conditions, which render the generated knowledge more reliable and relevant.

Die integrasie van navorsing oor landelike ontwikkeling en gemeenskapsdiens

Die integrasie van gemeenskapsdiens en navorsing is 'n belangrike onderwerp, veral in Suid-Afrika, waar die regering en die publiek 'n beroep op akademici doen vir vinniger en billiker ontwikkeling. Vir die doeleindes van hierdie bydrae raak dit landelike ontwikkeling in die besonder. Die voortbrenging en toepassing van kennis moet hand aan hand gaan omdat die proses waardeur kennis op werklike situasies van toepassing gemaak word, op sigself produktiewe uitdagings en terreine bied vir die toevoeging tot die beskikbare kennisinhoud. Diegene wat gemoeid is met die bevordering van die wetenskap, sal waardering hê vir die feit dat die geldigheid van die kennis wat op hierdie wyse verkry word, in realistiese omstandighede bevestig is en die gegenereerde kennis daarom meer betroubaar en meer relevant maak.

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The connection between research (knowledge about the real world and theories that enable us to explain how things work in that world) and practice (making and implementing choices) can be described in terms of a cycle or a dialectical, dynamic relationship where each informs the other but with different possible orientations or starting points.[1]

1. A dynamic relationship between research and practice

There are two dominating yet opposing methods of approaching this relationship. One approach is by starting research, and also teaching, with reference to "the literature" — to what is known. Study projects and lectures can be framed in terms of the gaps in present knowledge. From such considerations, one goes to the "real world" as a good empirical scientist to make observations, conduct interviews, and distill what is learned into publications that contribute to the expansion of the literature; the primary frame of reference and point of departure.

By contrast, one can take the "real world" as the frame of reference and point of departure. As one seeks to gain a better understanding of this world, one may draw benefit from the knowledge contained in the existing literature, learning as much as possible from what others have already discovered about the world "out there", to guide and inform research. The danger may exist that the literature one draws from may not be very applicable to real-world situations if it has been based on research that defined its problems and judged its merit primarily by what is already in the literature. Such knowledge is self-referential and risks being tautological.

The cycle (sequence) of both types of investigation is essentially the same, but the motivation and outcomes are different. In the first, one starts from the literature and goes to the real world for evidence

1 This is a reworked version of the keynote address that Prof Uphoff delivered at the Second Community Service Conference of the University of the Free State, entitled "The integration of community service and research — more about elephants and ivory", 16-17 October 2003, University of the Free State, Bloemfontein, South Africa.

and validation, then returning to the literature through the process of writing and publication. From there the cycle may resume and continue. In the second, one starts with the real world, and the problems and puzzles it presents, to undertake research informed by the existing literature. From this process, one produces findings that can and should be published, but that are fulfilled when taken back to the real world for application and problem-solving. Since we live in an imperfect world, the process should be an ongoing one.

In both instances, there is a dialectic between the literature and the real world, and both approaches attach value to both focuses of interest and concern. However, the starting points and implied points of conclusion (although these are not entirely points of conclusion as the cycle is ongoing) are different. The criteria of success also differ. In the first approach, publication and the respect of scientific peers is the greatest reward; for the second, making the world a better, happier, more productive, more sustainable place is important, as is the regard of fellow citizens; not what is contributed to the literature *per se*.

This distinction is noted to orient thinking, rather than to pass judgement, or to assert the superiority of the second approach, which is favoured by the author. As a person devoting greater thought and effort to the real world than to the literature, the author is quick to acknowledge that his practical work has benefited greatly from ideas and findings that were produced by persons who had little interest *per se* in improving the world, who were satisfied if they could make the literature more insightful, more interesting, and more complete. There is a sure need for both approaches to advance the interdependent domains of knowledge and practice. However, understanding the dialectical relationship sketched here should be of assistance when considering the integration of community service and research in South Africa.

Much of the research literature is driven by a preoccupation with the literature as opposed to the real world. The author is of the opinion that knowledge and theory would be improved if contributions to the literature were motivated by the needs and conundrums of the real world, as opposed to the puzzles and questions found in the literature.[2]

2 Cf the classic article by Peter Dorner (1971: 8-16), illustrating the manneer in which certain of the most seminal theoretical contributions in economics, by Marx and Keynes for instance, derived from engagement with real-world problems.

Scientific endeavour, judged at least in part by the criterion of parsimony, tends to simplify and to stereotype, even though the world remains a very complex and ever-changing place. Consequently, there are many shortcomings in the literature, even by its own positivist standards, that could be corrected by a continuous encounter with reality, not through the concepts and optics of existing theoretical formulations, but with minds open to new categories and new relationships. This is not to argue for precedence but rather for partnership, with the literature as the product of research and the accumulation of knowledge as well as practice existing in tandem, capable of informing the other and attempting to do so.

2. Adding human development to the relationship between research and community service

The Cornell International Institute for Food, Agriculture and Research (CIIFAD) was established in 1990 to tackle problems of sustainable agricultural and rural development. The university was granted a generous sum of money to enable its academic staff and students to improve knowledge and practice for sustainability in the world's developing countries, recognising that we have many problems and issues of this sort in South Africa and thus expecting a kind of cross-fertilisation from the experiences of both these countries.

Since Cornell is what is known within the American system of higher education as a land grant university, it has a three-fold mission of teaching, research and extension. It was charged from its inception with placing knowledge at the service of the public, by training the next generation of leadership, by building knowledge of relevance to society, and by actively extending this knowledge to citizens who can put it to use in non-academic ways. The elements of teaching, research and extension form a kind of "trinity" for American universities, at least those receiving public funding (cf Enarson 1989).

In thinking of ways in which to conceptualise efforts for sustainable agricultural and rural development on a global basis, this three-fold mission was embraced for CIIFAD, as decided by the Faculty's Programme Committee. However, it was decided to pour the old wine into new wine skins more suited to contemporary challenges. The term

"research", we substituted with the term "knowledge generation". Why? This was done because research refers to both a process and a product; a distinction which is often confusing. Efforts are made to justify the process irrespective of the value or utility of the product it yields.

The term "knowledge generation" clarifies that the criterion of success lies not in whether research was conducted, but in whether knowledge was generated. By focusing on knowledge as an output, attention is directed to the significance of the knowledge created. Was it of any value to anyone, and to whom? The question remains as to whether research is often justified almost for its own sake, and is assumed to lead to good results, even though it is a well-known fact that much research involves reinventing wheels or renaming them. For these reasons, it was deemed more productive to engage in "knowledge generation" than in "research".

While teaching has a long and noble history, appreciated by all, it is important to consider factors such as motivation and ethics alongside knowledge in a modern world which exercises a heavy demand for increased levels of knowledge. This implies that a process more holistic than "teaching" or "training" should be adopted. We used the term "human resource development", a term that recognises the multifaceted nature of human personality and capabilities.[3] This concept implies that the successful acquisition and application of knowledge requires many talents beyond the knowledge of facts, figures and theories. So, while CIIFAD has been involved in many education and training programmes, it has attempted to plan and conduct these with a concern for personal capabilities in more general terms, hence the use of the rubric "human resource development".

Finally, extension seems to be a term which is needful of new conceptualisation. It served America well for over 100 years. The word implies, however, an existing pool of knowledge which can and should be "extended" — from persons who have it to others who do not. While it is true that knowledge can be transferred, the corollary of this has been that "technology" can be transferred, and is presented as the

3 Some readers may object to thinking about people in "resource" terms as this may imply that they are valued on a merely instrumental level. The author takes the term to amplify the productivity and potential of people.

main function of extension. This thinking has provided the concept of "technology transfer", which has dominated and distorted development efforts for over 50 years.

There are a few technologies that are so self-contained and widely applicable that they can be "adopted", though most technologies need to be adapted, modified or reinvented — and many should be rejected in certain local circumstances. CIIFAD has avoided the term "technology transfer". Given the nature of its mission, it was decided to select "institutional strengthening" the third focus of its efforts. Nothing is inherently sustainable, and any innovation, however successful it might be initially, may become unsustainable as times and conditions change.

It is the "fit" between technologies and situations that produces sustainability, and this needs to be an evolving fit. For innovation to be ongoing, it is imperative that there are appropriate institutions enabling people to be more effective than they are as mere individuals; people who are capable of acquiring and disseminating knowledge which helps them understand and solve problems. Consequently, rather than take individuals as our focus, as was the case with "extension" in its original incarnation, we have looked for institutional partners which through collaborative efforts, are empowered to generate knowledge and develop human resources, with the aim of making any and all development more sustainable.

This suggests that we need to go beyond a polar relationship between research and community service (also known as outreach or institutional strengthening) to embrace a three-cornered relationship, in which human resource development, the human factor, is a necessary third element, critical to both research and to community service. This may be a statement of the obvious but it is well worth emphasising.

3. Going from three to four functions for knowledge

Trichotomies are more dynamic and indeed more stable than dichotomies, and therefore three-factor models generally have an advantage over two-factor models. Still, there are times and occasions when fourfold distinctions are more appropriate. A case in point is the analysis by Ernest L Boyer, who served as US Commissioner of Education under President Jimmy Carter, after having been Commissioner of Educa-

tion for the State of New York. He wrote *Scholarship reconsidered: priorities of the professoriate* (Boyer 1997), a gem of a book that charted four functions for professionals in the knowledge industry.

The first aspect or function for knowledge identified by Boyer was discovery. This involves the identification and presentation of things not known before: new facts, new phenomena, new relationships. This has formed the main image of what "research" is all about. However, Boyer wanted to move beyond this, not diminishing the importance of discovery, but placing it in perspective and relating it more integrally to other knowledge-related activities.

The second aspect or function was integration of knowledge, connecting facts, phenomena and relationships into larger patterns and explanations. This aspect has been sufficiently emphasised in most considerations of the knowledge enterprise. Integration can be characterised as a "horizontal" function for knowledge professionals, contrasted to but dependent on (and interdependent with) the more "vertical" function of discovery. Unfortunately, in academia, rewards and prestige more often are awarded to discoverers than to integrators.

It is harder to evaluate integration than a discovery, because there can be many ways to achieve integration, but discovery is usually unique and can be assessed less ambiguously. Integration is, however, essential for getting from discovery to the other two functions, for making discovery intelligible and meaningful. Integration is necessary within disciplines, but it is even more important across disciplines. A full appreciation of integration would lead to the awarding of as much status and support to inter-disciplinary work as to disciplinary accomplishments. However, given the way that universities are presently organised and reward systems are structured, and given also the vested interests in disciplinary ways of thinking and evaluating, discovery is presently preferred over integration within academia.

The third function identified by Boyer was application, listed in this position partly because he recognised, as opposed to many academics, that knowledge once discovered and integrated still needs some test of application; a means of validation beyond that of academic methodologies and consensus in the literature, before it is regarded as fully authenticated for distribution. This third function relates to the activities of outreach and community service that have formed part of

American universities' mandate for over a century, though ivory-tower predilections have prevented this mandate from true fulfilment. It is gratifying to see that South African higher education institutions are taking this aspect of the knowledge enterprise seriously.

The fourth function is dissemination, considered last not because it is least important, but because it should reflect and benefit from the first three. Education of the next generation is more than a function or a mission, it is an exalted trust. But it should be undertaken, in Boyer's view, in conjunction with the discovery, integration and application of knowledge, not as something autonomous.

This four-fold model of knowledge discovery, integration, application and dissemination is presented because it casts a somewhat different light upon the dualism of the literature and the real world presented earlier. The model disaggregates knowledge into discovery (or analysis), on the one hand, and integration (or synthesis), on the other. Both are essential tasks, and some people are better equipped for one than the other, just as some are better equipped to take knowledge and apply it or to disseminate it than to generate it in the first place. But integration deserves as much recognition and reward as discovery, just as analysis without synthesis is an empty, even nihilistic undertaking. The model also highlights the often missing function within land-grant enterprises. Without integration, discovery makes little sense and has little effect when it comes to dissemination and application.

4. Connections between knowledge and practice: the place of action research

This formulation by Boyer is simply another way of thinking about the relation between knowledge and practice. Let us revert to a two-focus model again, having progressed from two to three to four. One of the most innovative areas of academic research over the past 20 years has been the emerging field of action research.[4] This challenges the usual concept of there being a normative sequence in which knowledge is

4 For persons not acquainted with this approach, informative introductions can be found in Stringer (1999); Rahman & Fals-Borda (1991), and Greenwood & Levin (1998).

first gained, for instance through research, after which it is applied and put into practice. The conventional research cycle sees knowledge as informing and guiding action.

Action research instead renders this a two-way process, with action or engagement in processes of social change, informing and guiding research — at the same time that the knowledge already accumulated or acquired, at least partly through research, is used to inform and guide action. One does not assume that it is necessary, or even possible, to have full and sufficient knowledge as a prerequisite for action. Instead, action is initiated on the basis of best available knowledge with the recognition that this knowledge will be incomplete and even to some extent outdated.[5]

One version of action research is the variant known as "participatory action research" (PAR). Here, people who in conventional research designs would be the objects of the research, instead become partners in the formulation of research objectives and designs, in the conduct of the research and in the evaluation of results. The purpose of PAR is to engage people in the improvement of their own situations, studying the process of social change systematically, with both "objective" and "subjective" perspectives fused together, including both the "etic" and the "emic" approaches coined by anthropologists.[6] Several examples of PAR which have been supported by CIIFAD in the Philippines and Dominican Republic will illustrate the merits of this form of action research.

In the first case, Venancio Acebedo (2002) conducted field research for his PhD thesis in Natural Resources on his home island in the Philippines, Bohol, to document and evaluate the wide range of services and benefits people derive from plant biodiversity, much of which remains outside of the literature. He planned the study to be partici-

5 After all, most knowledge has a "half-life" somewhat akin to that of radioactive materials. With the passage of time, some part of almost any knowledge becomes outdated, and possibly even insufficient or irrelevant.

6 On this distinction, cf Headland *et al* (1990). The first perspective refers to the "interior" view of reality, imbued with meaning and purpose; the second refers to an "exterior" view, using concepts and criteria that are comparable across contexts. For examples of the two approaches, cf Krishna *et al* (1997) and Uphoff *et al* (1998).

patory in nature by engaging local youths as field assistants to work in 13 rural communities. When consulting with community elders in order to gain their approval and support, a counter-suggestion was made: instead of hiring assistants, why not dedicate the money in this budget line to the awarding of prizes to communities for their own ientification of plants and the documentation of their uses?

A "jeopardy"-style quiz-show format was designed where, once a month, representatives of the 13 communities would meet to see which of these communities had been able to identify most new plants and their uses. These events were enthusiastically attended over a six-month period. Prizes in the form of school supplies such as pens, pencils and writing paper were awarded. Acebedo (1997-98: 47) reports:

> I was surprised by the enthusiasm with which men, women and children, young and old, entered into the spirit of the competition. With so many people involved we were able to collect many more plants than if we had relied on field assistants. We were also able to gather much more information about people's knowledge and practices related to these plant resources.

The information collected in this way was more complete in scientific terms because it had been vetted by representatives of the dozen other communities in an open forum. Any errors or omissions could be corrected with more speed and accuracy than if field assistants had collected such information door-to-door as was the original "participatory" plan. The two winning communities collected 378 and 354 plant species in their respective areas, all with one or more documented human uses.

This research experience would have been remarkable in itself, but it had an even wider effect. As the research project was coming to a close, community leaders suggested that the knowledge they had gained from participating in this study should be shared more widely within the province of Bohol. At their own initiative and without outside funding, 12 communities staged a "Plant Resources Festival" on the campus grounds of the Bohol Agricultural College, to demonstrate the benefits of plant biodiversity to festival goers. Over 1 000 persons attended and viewed the displays, taking part in contests and games intended to heighten consciousness of the benefits of plants to human beings (cf Acebedo 1997-98: 150). Could such public education ever have originated from standard research methodology?

In the Dominican Republic, Radhames Lora, also in a PhD programme in Natural Resources at Cornell (awarded in 1995), studied the factors affecting water run-off and soil losses around Los Haitises National Park. In this project, CIIFAD, together with the Universidad Nacional Pedro Henríquez Ureña and other partners, was trying to manage these factors more effectively and with more local participation.[7] Lora's approach involved getting the farmers to record measurements on their fields, representing a range of slopes and land uses to be evaluated. The measurements may not have been as accurate as they could be if recorded uniformly, but in this way it was possible to take many more measurements and they reflected a greater variety of (more representative) conditions than the earlier study. Consequently, Lora's thesis made a greater contribution towards useable knowledge than the preceding research. The response of the Philippino community was inspiring. At the conclusion of the project, after Lora had shared his tentative findings, members of the community asked him to help raise funds to transform their location into a demonstration station for promoting soil conservation practices that had been validated by the research. Fortunately, Winrock International made a grant to start this local effort. Farmers themselves, on having gained a better understanding of good versus bad land use practices, shared these with other communities. This once again demonstrated, to CIIFAD, the way in which a participatory approach to research could contribute both to better scientific knowledge and better local practice.

PAR and action research expand the universe of options in which research and community service can be thought about and undertaken, moving beyond standard academic research modes. There are many issues to be considered, a central one being the validity of "non-objective" data and analysis. However, the author is of the opinion that this issue has been misconstrued, as even so-called "objective" data is interlaced with subjective elements, starting with the selection of research questions and methodologies, all of which are value-laden in their own

7 I happened to visit a nearby watershed in 1994 where an agronomy PhD student from another US university had studied soil erosion, and I saw the big concrete structure that he had constructed to measure run-off very precisely a decade earlier. It was like an archaeological ruin.

particular way. Action research attempts to make value premises and assumptions explicit so that they can be scrutinised, thus minimising tacit biases. However it may be, the success of action research and PAR will be judged to a greater extent by what it contributes to the real world than to the literature.

5. Validation of knowledge

This question of validation is a serious one, since knowledge that is mistaken or misconstrued will not bring benefits to communities or others who expect to be served by its application. Researchers have a responsibility to produce valid as well as useful knowledge. Debates over ontological and epistemological questions can become very lengthy, and that they will not be discussed in great detail.

What can be said is that many of the philosophical concepts and research methods of the twentieth century have been strongly challenged in recent decades. As we embark on the twenty-first century, we should be mindful of the new thinking that reflects the limitations and shortcomings of past efforts. Those before us were not less clever than we, and their insights and conclusions should be respected. But none of the previous generations have attained a monopoly on truth or any certifiable infallibility, and neither have we. We develop methodologies intended to minimise errors in measurement and interpretation, but the scientific canons and norms that we have inherited cannot make any claim to monopoly or infallibility.

There is a heterodox school of thought that goes under various designations — post-modernism, deconstructionism, relativism, constructivism — which has made many established academics quite uncomfortable. Its proponents have challenged basic notions about what constitutes "truth" and how we can know this with any certainty. I myself do not accept the rhetoric of these critics, partly because, in my opinion, much of what they argue is negative, sometimes nihilistic. But there are some important insights and ideas in their critique of orthodox scientific endeavour that warrant attention.

We need to filter out what seems to some like shrillness, grasping the core of this perspective. It is an antithesis that needs to be improved upon so that a new synthesis can emerge. In the author's opinion the

present modes of scientific endeavour will be substantially though not entirely altered in the decades to come, particularly through the introduction of more relativistic, less absolute concepts of truth, and by bridging the overdrawn dichotomy between objectivity and subjectivity. This decentering began a century ago with the construction of theories of relativity and of quantum physics, which illustrated that the frame of reference and the role of the observer affects what may be regarded as true.[8]

6. Utility as a value in assessing knowledge

The selection of what to study when seeking to generate new knowledge, as well as the criteria for evaluating the merit and worth of what is learned from such pursuits has traditionally been guided by notions of "truth". What is true? How can we reduce the domains of ignorance and falsehood? As noted above, some of the confidence with which we know something to be true has been challenged and even shaken in recent years. But the abstract value of truth, itself an abstraction, remains the most powerful point of reference in academic domains.

A challenge to this presented itself long before post-modernism was conceived, starting in the latter nineteenth century with Charles Peirce and William James and given more forceful articulation in the early twentieth century by John Dewey under the rubric of "pragmatism". Given that our minds tend to seek utility over veracity,[9] utility should not be relegated to second-class status but should be given at least equal standing. Irrelevance should be seen as detrimental to truth, as falsehood is damaging to utility.

The author would like to report on his own experience in recent years, which has shown how a scientific fixation on what is "true" — assuming that this can be ascertained in a certain, binary way and neglecting the potential benefits from expanding upon current understanding — can hold back significant advances in knowledge and

8 This is assessed in part II of my book *Learning from Gal Oya: possibilities for participatory development and post-Newtonian social science* (Uphoff 1992/1996).

9 On the proposition that minds give more weight to utility than to veracity when retaining and shaping knowledge, cf Silva & Josselyn (2002: 929-30) on recent findings from cognitive neuroscience research on memory.

practice. Scientific norms in force now require certain kinds of quantification, replication, and formalisation before the truth value of something new will even be considered, let alone be accepted. Many scientists are so afraid of entertaining ideas that may be wrong, that they screen out ideas that could be very useful and indeed may be validated as true, though perhaps without the precision that is usually expected because the relationships involved are many and complex.

The System of Rice Intensification (SRI) was developed in Madagascar 20 years ago by a French Jesuit priest, Fr Henri de Laulanié, after two decades of working with farmers there to increase their rice production, for the purposes of poverty and hunger alleviation. He devised a combination of plant, soil, water and nutrient management practices which held the potential of doubling or tripling rice yields, without the use of new high-yielding varieties, of chemical fertilizers or chemical crop protection, and using approximately half as much water as is usually applied for irrigated rice production. This innovation was rejected by all of the rice scientists in Madagascar and by professionals of the International Rice Research Institute as being "too good to be true". The author willing to give the non-governmental organisation (NGO) promoting SRI a chance to show what it could deliver.

For the first three years, the author maintained a proper level of scientific scepticism, not wanting to identify Cornell University with something that could prove to be a hoax or mistake. However, after the farmers using these new methods had continued, for three consecutive years, to average eight tons of rice per hectare (where they had yielded two tons per hectare before), it was concluded that scepticism is something to be optimised, not maximised. It took two years of personal effort to persuade researchers at first-rate institutions in China and Indonesia to try SRI, and in 1999 our predictions were finally confirmed. Still, SRI continued to meet much resistance and even deprecation in international scientific circles.

There are many possible reasons for the resistance with which SRI was met, but one generic one was that researchers were not considering the importance of this innovation for poor people and the environment. Rather, they assigned a very low probability of truth to SRI and preferred not to risk damage to their reputations or expending any effort to investigate this innovation. The author himself considered that SRI had

only a 5% chance of being true on first hearing about the innovation, but figured that even 5% of a huge potential benefit was something worth pursuing. This stands in contrast to the attitude of most scientists today, possibly because so much money is involved in research undertakings, which dictates that something is likely to be pursued only if there is a 90% likelihood that it may be true.

SRI is being validated, and is spreading among farmers in more and more countries. In Cambodia, the head of a local NGO, CEDAC (Community Economic Development Assistance Corporation), personally tested the method in 1999, to be sure that it worked before promoting it amongst farmers. In 2000, he was able to convert only 28 farmers to trying out the methods, even though they had a doubling of yield or more. The next year, 400 farmers tried SRI based on what they had seen and heard of the experience of others. In 2002, this number expanded to over 2,500, and in 2003, it was approximately 9,100. In 2004, it was expected that 40,000-50,000 farmers may take up SRI with the possibility of a doubled yield at a lower cost of production.

In the Indian state of Andhra Pradesh, the director of extension, Dr A Satyanarayana, visited Sri Lanka in January 2003 to learn about SRI directly from farmers who had mastered the techniques. On returning, he launched an information campaign and got 300 comparison trials set up on farms across all 22 districts of the entire state for the summer (*kharif*) season. The average yields were over 8 t/ha, compared to a present state average of 3.8 t/ha. These trials were overseen by the state agricultural university and extension service, and thus standard methods of measurement were used. In the winter (*rabi*) season, approximately 2,500 farmers used SRI methods on about 6,000 hectares of land, and the average yield was around 10 t/ha, with some farmers yielding up to 15-16 t/ha, above what most rice scientists consider to be the "biological ceiling" for rice production. Thus, SRI has been demonstrated as true and useful despite the rejection and dismissal of scientists thinking that their present knowledge is complete and correct.[10]

10 See criticisms made of SRI in an article published in *Nature* (March 25, 2004) written by established scientists. Their claim, for example, that SRI rice takes two weeks longer to ripen is simply inaccurate. In Andhra Pradesh and Cambodia, we see SRI crops maturing 7-10 days sooner than regular rice. The cited trials in China were not conducted with protocols reflecting SRI principles and were

The author suggests that utility is considered on par with truth, seeing the value of the latter to be bound up with the former, just as the former — utility — depends on the latter — truth. This may sound abstract, but it is a very good general principle to work with. The work of South African higher education institutions and their various community-based partners, in linking research with community service will benefit from valuing utility alongside truth. This may be likened to action research, where knowledge and action inform and guide one another, as opposed to knowledge preceding action. With regard to truth and utility, we should not seek truth in the first instance, and then figure out how to utilise it. Rather, we should consider truth and utility concurrently, holding up both as supreme values.

This is not simply a "do-good" philosophy. It is grounded in respectable epistemological reasoning. I would like to close with a statement by another Jesuit, Fr Henry Volken, and his Indian collaborators, Ajoy Kumar and Sara Kaithathara, from their book, *Learning from the rural poor: shared experiences of the mobile orientation and training team* (Volken *et al* 1982): "It is said that if you want to know reality, you must try to change it". This rephrases an observation from the eminent American psychologist Kurt Lewin. There are very good grounds for taking an "engaged" approach to the generation of knowledge. Some would put the "horse" of knowledge before the "cart" of action. But in practice, knowledge and action should be a team pulling the cart of social change and improvement. In my view and experience, we can learn more from engagement in real-world situations and with real-world problems than we can by making the literature our point of reference and point of departure. The literature should be used as a resource to improve our accumulation of effective knowledge, validated through practice and not just scientific methods.

This is the implication of Boyer's analysis discussed above. His perspective is quite consistent with the view that truth and utility should not be regarded as one having some innate priority over the other. They should be partners in the human enterprise to make our lives and

very limited. Evaluations of SRI in China by established institutions have shown 20-100% increases in yield with the new methods. For more on SRI, cf my article (Uphoff 2003: 38-50).

those of others more prosperous, more secure and more fulfilled. Engagement of academic staff and students with community leaders and members, as well as with diverse public and private sector institutions, should put South African higher education institutions on a different and more productive path than that inherited from members of preceding generations, who saw truth as more isolated from reality, reflecting perhaps the philosophy of Plato. This justified keeping universities separate from the rest of society; something which cannot be sustained. Linking research with community service is a very practical way to begin remaking South African higher education institutions for a more exalted and sustainable role in the twenty-first century.

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