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Inter-disciplinarity, development studies, and development practice[1]

Oluwatoyin Dare Kolawole

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The article primarily seeks to show the interconnectedness of diverse academic disciplines and their crucial role in development practice. It sheds light on the meanings of development-related concepts and seeks to delineate between the four inter-related concepts of multi-, inter-, trans-, and cross-disciplinarity. It argues that while inter-disciplinarity is desirable for a broad-based discipline such as Development Studies, the appropriateness of the concept when juxtaposed with trans-disciplinarity seems somewhat inadequate. Buttressing the importance of the contributions of all disciplines and of course development initiatives to Development Studies, case studies of failed water and agricultural projects – which never incorporated vital and cognate expertise – in the South are, thus, provided in the discourse.

Interdisciplinarité, études du développement et pratique du développement
Cet article cherche principalement à mettre en évidence le caractère interconnecté des diverses disciplines universitaires et leur rôle crucial dans la pratique du développement. Il jette la lumière sur les significations des concepts liés au développement et cherche à définir les quatre concepts interconnectés de multi-, inter-, trans- et supradisciplinarité. Il soutient que, bien que l'interdisciplinarité soit souhaitable pour une discipline à la base large comme les études du développement, son caractère approprié lorsqu'elle est juxtaposée à la transdisciplinarité semble quelque peu inadéquat. Pour étayer l'importance des contributions de toutes les disciplines et, bien sûr, des initiatives de développement, pour les études du développement, des études de cas de projets dans les domaines de l'eau et de l'agriculture entrepris dans le Sud – qui n'avaient jamais incorporé des connaissances techniques spécialisées vitales et apparentées – sont présentées.

Interdisciplinaridade, Estudos de Desenvolvimento e Prática de Desenvolvimento
O artigo busca principalmente mostrar a interconexão de diversas disciplinas acadêmicas e seu papel crucial na prática de desenvolvimento. Ele esclarece os significados dos conceitos relacionados a desenvolvimento e busca delinear os quatro conceitos inter-relacionados de multi-, inter-, trans- e entre-disciplinaridade. Ele argumenta que embora a inter-disciplinaridade seja desejável para uma disciplina com ampla base, tais como Estudos de Desenvolvimento, sua adequação quando justaposta com trans-disciplinaridade parece de certo modo inadequada. Reforçando a importância das contribuições de todas as disciplinas e, logicamente, iniciativas de desenvolvimento para Estudos de Desenvolvimento, estudos de caso mal-sucedidos de projetos de distribuição de água e projetos agrícolas no hemisfério sul – que nunca incorporaram conhecimento vital e cognato – são apresentados.

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Interdisciplinariedad, estudios sobre desarrollo y prácticas de desarrollo
El propósito principal de este ensayo es demostrar los vínculos que existen entre diversas disciplinas académicas y su importante papel en la práctica del desarrollo. Asimismo, se aclaran los significados de conceptos del desarrollo, definiéndose cuatro relacionados entre sí: la multi-, inter-, trans- e intra-disciplinariedad. Se sostiene que la interdisciplinariedad es apta para una disciplina general, como los Estudios sobre Desarrollo, pero pierde vigencia al ser comparada con la transdisciplinariedad. Para reforzar la importancia que tienen todas las disciplinas, y desde luego la que tienen distintas iniciativas al interior de los Estudios sobre Desarrollo, se presentan estudios de caso realizados en el Sur sobre proyectos agrícolas y de agua que fallaron por no incorporar el conocimiento vivencial y cognitivo.

KEY WORDS: Methods; Sub-Saharan Africa

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Introduction

The distinct boundaries of academic disciplines and their research traditions suggest a production-line factory where job specialisations and division of labour are central to efficient output delivery. By design, various units operate differently in their little worlds, but with an ultimate aim of working coherently towards achieving the organisational goals and objectives. The interdependence of these various divisions (both internally and externally) is crucial for the emergence of a quality product. Thus, academic disciplines are seen as the clearinghouse for knowledge production aimed at achieving human progress. Indeed, meaningful human development cannot be achieved if the disciplines work singly and in isolation. Although nuanced, each discipline makes a contribution to development theory and practice.

By implication, then, there is the need for dialogue and mutual understanding across and within disciplines. But this is not what happens most of the time! My personal experience as an academic in the South is a good example. Just as in other disciplines, agriculture (the field in which I received virtually all my training[2]) has various branches, ranging from animal science, crop science, soil science, and agricultural economics to agricultural extension and rural sociology. Within each of these are other sub-branches. Nonetheless, just as the relationship between development studies (DS) and economics has always remained controversial (Sumner 2006; Harriss 2002; Kanbur 2002), there have also been attritions between natural and social scientists in the general field of agriculture. Some of my colleagues – whether mischievous or merely ignorant – do not even see the relevance of the social sciences to the field. The most common reason adduced by these 'experts' is that social sciences are soft. Indeed, my own field (agricultural extension and rural sociology) has received an unfair share of this prejudice. While the agricultural economist is still accorded a measure of respect among colleagues, the same cannot be said of the agricultural extensionist. Plant and animal breeders working in the Faculty would rather go it alone in their various research endeavours without needing to seek the opinions of extension professionals. They would prefer to keep their research findings on their shelves! Or better still, they are content as long as they get those works published in scientific journals, regardless of whether or not the information is accessible to policy makers and other potential users. How then can we achieve a meaningful agricultural revolution, even development, in such an apprehensive atmosphere? Without doubt, the implementation of any policy is a function of the approach by which it is conceptualised and formulated. I shall return to this point later.

Human beings will always be central to 'development'. The nature of their diverse needs points clearly to what development is all about. Essentially, the multiplicity of human needs and their attendant problems suggests that issues relating to development have to be addressed through several approaches, if only to achieve a measure of desirable human emancipation and progress. In a way, development practitioners may in the past have erred in oversimplifying the topic, leading to inappropriate models to address various human dilemmas. Development was for a period equated with economic growth and nothing more by the economists (Todaro and Smith 2003). Apparently engaged in scientific reductionism and without due consideration given to other dimensions of human well-being, i.e. socio-cultural, spiritual, and environmental aspects, they posited that increase in per capita income (or per capita Gross National Product) would automatically translate into national economic progress! The failings of their various 'magic wands' bear witness against them as we journey along the path of development history, be it regional or global. Thorbecke's account (2006: 1–34) vividly reveals the weaknesses of various development doctrines over this period.

In this article, I attempt to highlight the key features of development and then consider what development studies is all about. I shall also analyse the four inter-related concepts of *disciplinarity*; provide a critique of the term *inter-disciplinarity*; and then situate the appropriateness of *trans-disciplinarity* within the framework of development practice.

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Key features of development

Chambers (2005:186) comments that '[d]evelopment has been taken to mean different things at different times, in different places, and by different people in different professions and organizations. . .Development has thus often been equated with economic development, and economic development in turn with economic growth, often abbreviated simply to growth.' This concept of growth warrants a brief digression from the primary intent of determining what 'development' might mean. It is important to stress that while 'growth' is a necessary condition, it is in no way sufficient to enhance human development. Right through the formulation of modernisation theory in the 1950s to economic dualism (1960s), dependency theory (1970s), and stabilisation and structural adjustment policies (1980s and 1990s), development experts have as yet not found the right answer to solving the problems associated with development (Thorbecke 2006: 1–34). As the years roll by, the myriad problems of poverty, unemployment, and inequality have continued to inundate and overwhelm countries, particularly in the South. Whether the current globalisation and pro-poor growth strategies of the twenty-first century will achieve better results remains to be seen. Meanwhile social agitation is mounting by the day.

Now back to what development might mean. The world-renowned economist, Dudley Seer (1969: 3), cited by Olatunbosun (1975: 20–22), defines the concept as 'the realisation of the potential of human personality'. Buttressing this view, a recent UNDP *Human Development Report* (HDR) affirms:

> *Human development is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests . . . Development is thus about expanding the choices people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means – if a very important one – of enlarging people's choices.* (UNDP 2006)

It goes further to say that '[p]hilosophers, economists and political leaders have long emphasized human wellbeing as the purpose, the end, of development'. Similarly Chambers (2005: 186) argues that '. . .the underlying meaning of development has been good change'. Regardless

of the controversies concerning arguments about the meaning and complexity of the concept, wisdom suggests that the centrality of human beings in the whole process is a 'fact' that cannot be wished away. Thus, Todaro and Smith (2003: 54–57) outline the three basic components of development, which '...serve as a conceptual basis and practical guideline for understanding [its] inner meaning...'. These core values are sustenance (the ability of individuals to meet their basic needs); self-esteem (which implies a sense of self-worth); and the freedom from servitude (the ability of an individual to make choices between different alternatives). This is in agreement with Sen's capability approach (1985: 25–6; 1999: 70–5).

The multi-faceted nature of development, which is most apparent in people's socio-economic, cultural, environmental, and spiritual lives, now informs the need for an eclectic approach to development (as opposed to the straitjacket models earlier propounded by several development experts). This is the aim of development studies. The following section attempts to shed some light on the nature of the discipline.

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What might 'development studies' mean?

Having explored how development is conceived, we need to highlight what DS is all about. It goes under different names and is known, among others, as 'international development studies', 'Third World studies', 'international development', 'world development', and 'international studies' (Sumner 2006: 648). In the context of the integration of environment and development, and of sustainability and equity, DS has been defined to mean 'the study of the interface of society and nature with the intention of contributing to change, seen as the improvement of sustainability and equity' (Molteberg and Bergstrom 2000: 6). Emphasising its diversity, they also define DS as 'the study of processes of change at the interface between natural and social-cultural systems' (2000: 7). Elsewhere, DS has been conceived as a field of diversified subject matter (in contrast to the earlier misconception of its being homogeneous,[3] which now takes into account 'context-specific matters' and has radically departed from universal basic fundamentals (Sumner 2006: 645). Thus, it is perhaps safe to infer that DS uses *inter-disciplinary* approaches to unearth information necessary for solving fundamental or pertinent issues that impede human progress. Although somewhat crucial to this article, the use of *inter-disciplinarity* in the above definition is still subject to debate, an issue that I will address later. The multi-dimensionality of the discipline itself is seen as a form of 'mixed blessings' of sorts. As Corbridge acknowledges,

> *[f]or many of us, though, the explosion and fragmentation of development studies has been at least as liberating as it has been frustrating. With the question of democratization, citizenship, liberalization, institution-building and the environment coming to the fore in the 1980s, the need for an interdisciplinary view of development – for a development studies, as opposed to a development economics/geography/sociology – has become ever pressing.* (1995: ix)

Between four interrelated concepts of 'disciplinarity'

Although Sumner and Tribe (2008: 67–8) acknowledge the superiority of cross-disciplinary over non-disciplinary research, they offer no in-depth analysis of each variant of disciplinary studies in DS. In a bid to minimise ambiguity, therefore, this section offers some critical analyses of four inter-related concepts of 'disciplinarity'.

Cross-disciplinarity

Kanbur conceptualises cross-disciplinarity as an umbrella or a general concept, as '...any analysis or policy recommendation that is based substantially on the analysis and methods of more than one discipline' (Kanbur 2002: 483). This 'generic term' represents a continuum that stretches across all the other three concepts of multi-, inter-, and trans-disciplinarity (see also Kolawole 2009). In other words, the broad scope emanating from multi-, to inter-, and to trans-disciplinarity reflects what is known as cross-disciplinarity (see Figure 1). Perhaps this concept is perceived as an extended regulatory mechanism. Thus, Harriss (2002: 488) writes that '...academic disciplines are saved from themselves by cross-disciplinary work, whether through multidisciplinarity [sic], when arguments from within different disciplines are set side-by-side, or through more rigoros [sic] interdisciplinary exercises that attempt to integrate the theoretical and methodological frameworks of different disciplines'.

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Multi-disciplinarity

The multi-disciplinary approach comes to bear when each discipline is given all the space and freedom that it needs to use its own methodology and system of analysis to address a particular issue, subsequently analytically synthesising its output with those of other disciplines 'with a view to using the emerging integral result for policy conclusion, as the case may be' (Kanbur 2002: 483). This categorisation, conceived as an 'additive approach' in the work of Molteberg and Bergstrom (2000: 11), portrays a semi-disjointed design among concerned disciplines as they seem to stand aloof within the same sphere of knowledge production (see Figure 1). It would appear that each discipline has a distinct boundary, which it must not cross. Doing so would be academic sacrilege! In essence, multi-disciplinarity intentionally creates a professional demarcation and traditionally distinct identity for each of the players involved. This may have had a negative impact on the productivity of the entire group. Imagine a situation where a group of experts (comprising agronomists, animal scientists, economists, agricultural engineers, rural sociologists, etc.) is required to carry out joint research on the enhancement of food security in sub-Saharan Africa. Cross-disciplinarity researchers would rather stick to their individual disciplinary traditions and methodologies, if only to avoid the shame of being suspected of lacking 'rigour' in their research practice (see Hulme and Toye 2006: 1095–97). As such, while the plant scientist is interested in identifying and breeding particular crops, the soil scientist is investigating soil

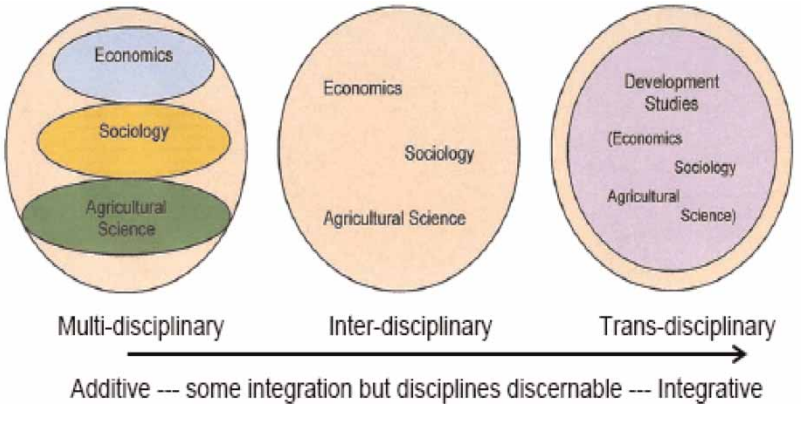

Figure 1: Different forms of mix between various disciplines in a cross-disciplinary scenario (*source: Sumner and Tribe 2008: 68*).

fertility management issues; animal physiologists and breeders are thinking about how to raise choice animal stocks; the engineers are preoccupied with the design of machines and equipment to boost production and enhance harvest and processing; the economists are engaged in the dynamics of economies of scale, supply and demand, marketing and distribution; and the rural sociologist and/or extension expert is busy investigating the socio-cultural dynamics of the agrarian constituency; all of them acting in disciplinary solitude.

By and large, while it is assumed that they have taken different routes to target a common goal, these experts may have failed to work towards a desirable congruence because of the emphasis that each individually places on a particular subject area, without a prior clear-cut general consensus about the perceptions of those for whom those innovations are developed! Regardless of how grand the 'additive' outcome is, the failings inherent in the project design, which fundamentally looks down on the common perspectives about the end users concerning the project outcome, may have been the subtle undoing of multi-discipline research.

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Inter-disciplinarity

Inter-disciplinarity tends to be seen as nebulous (Molteberg and Bergstrom 2000: 11), for comprising both multi- and trans-disciplinarity approaches. Kanbur (2002: 483) argues that inter-disciplinarity entails 'inextricable interweaving' or integration of all disciplines right from the beginning of the analysis of a problem up to the stage of policy recommendation, if that is the objective. For Molteberg and Bergstrom (2000: 11), it is an interface between the approaches of multi-disciplinarity and trans-disciplinarity. Nonetheless, it does appear to be an immature and improper mix, somewhat motley, situated to various degrees within a defined sphere or frontier of knowledge production, perhaps due to its positioning on the continuum (see Figure 1).

When we compare the structural natures of both inter- and trans-disciplinarity, not only do various disciplines working within inter-disciplinarity arena stand alone within a defined system, their seemingly independent nature gives them a disguised solitary existence in their own world within the global sphere of knowledge production. Each discipline thus performs its research role perfunctorily within the group. For Kanbur (2002: 483) to have described the association as 'inextricable' speaks volumes about the extreme complexity and hopelessness involved in the union. Kanbur's lack of confidence in the workability of inter-disciplinarity may have informed his tacit advocacy of multi-disciplinarity elsewhere (as discussed below). Although far better-off than multi-disciplinarity, the immaturity and near-fledgling status of inter-disciplinarity is thus apparent in its transitory status along the continuum. The collaborative scenario presented in the earlier discussion of multi-disciplinarity comes close to what obtains here. However, this amalgam is an improvement over a mere disjointed collaborative effort, as described above in the section concerning multi-disciplinarity. In this case, a better understanding of what to research, and for whom the research is intended, is premised, to a considerable degree, on an agreeable methodological alliance and trade-offs among stakeholders. In other words, research solitude is substantially minimised.

Trans-disciplinarity

This approach is seen as 'integrative': a process in which individual disciplines are required to give certain measures of contribution at different levels to the additive engagements. In this fashion, the levels of integration need to be explicit in order to reduce ambiguities in the task to be performed (Molteberg and Bergstrom 2000: 11). By design, it does appear to be a thorough mix of all the disciplines at work within the given sphere and boundary (see

Figure 1). Somehow, it appears that trans-disciplinarity reflects the kind of 'perfect' relationship required for a synergetic effort among cognate disciplines. The naturalness with which each of the disciplines is enmeshed within a sub-system, which is in turn subsumed in a global system, does encourage a 'frictionless' relationship.

By and large, Kanbur (2002: 484) argues that '[c]ross-disciplinarity is not straight forward. . .', and that consequently '[p]erhaps the best that can be hoped for is multidisciplinarity, where different disciplines are set the task of answering a common set of analytical or policy questions, and once this task is done, a synthesis is attempted which provides an overarching analysis and policy conclusion' (*ibid*.). This proposition seems, however, to lay a faulty foundation, just as the frameworks or 'rules of conduct' on which analyses are based inherently tend to dissonance! There also appears among them a sharp dissimilarity, so that each of the parties stands aloof, as it were, even though they are contiguous. They thus come across as strange/alienated neighbours in their working methods. What is ideal here, one might think, is for all concerned disciplines to reach a consensus on the 'best' available option, even before undertaking any form of methodological and or policy analysis (Kolawole 2009). This they can do by showing some level of maturity and understanding among one another, regardless of the constraints and ideological frictions associated with the union. In so doing, confusions and ambiguities are minimised. This is trans-disciplinarity. Here, the 'ideal' type of cross-disciplinarity in development research comes to bear in trans-disciplinarity, where the individual experts involved, despite their distinct academic cultures, do not disdain one another. Just imagine a situation where all experts have a prior shared perception of the people for whom development projects are designed, even before the outset of the research. Just imagine a project designed and implemented throughout on the basis of this prior knowledge and on the preferences of the end-users. This may prove a Herculean task. Yet, it could, in the long run, be achieved with determination and professional zeal.

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Inter-disciplinarity, development studies, and development practice: what relationship?

The multi-dimensional and holistic nature of development and indeed DS as enunciated by Corbridge (1995: ix) suggests that issues have to be addressed from different perspectives. There can be no one single approach and answer to resolving problems arising from development activities and among development practitioners. Routing development solutions through diverse pathways is the only realistic model for enhancing human progress. Apart from the fact that people perceive phenomena around them from different perspectives, researchers and academics in the field of development must appreciate that each discipline is indispensable to the challenge of solving pertinent human problems. The way in which different individuals view a mountain, for instance, will depend on where they are situated. Perhaps the following hypothetical scenario will encapsulate the issues. Imagine a group of experts comprising geographers, ecologists, engineers and builders, sociologists, historians, demographers, economists, town planners, etc. viewing a given human settlement. The way in which each of them would analyse the settlement pattern would probably be informed by his or her training. To offer a meaningful and sustainable solution for any given problem in that context would need everyone to lend a supportive hand. Human problems need to be appreciated and viewed from the socio-economic and politico-cultural standpoints in order to ensure all-round and durable solutions. This is exactly what the role of trans-disciplinarity is all about in the field of DS, which without any doubt comes across as the best option for achieving synergy among development practitioners. All hands must be on deck in order to prevent rocking the development boat.

Earlier debate about whether *trans-disciplinarity* should replace *inter-disciplinarity* is a different ball game. Basically, this article argues that the former seems the most appropriate approach. The blend of disciplines within the sphere of knowledge production at one extreme of the spectrum suggests that experts would work better with each other, just as the levels of empathy, understanding, and endurance will improve, all things being equal. It might have been thought that representing the three approaches of multi-, inter- and trans-disciplinarity on a Venn diagram subsumed within the confines of the holistic *cross-disciplinarity* – where all three intersect at a point – should have sufficed. That point of intersection would suggest a common ground and/or frontier, which trans-disciplinarity portrays. Indeed, the appropriateness of inter-disciplinarity in DS and development practice is central to our argument. This debate can be put aside in the interim, first to allow readers to appreciate the importance of healthy unison among development professionals, and second to give the argument a clear direction. This leads to the need to illustrate cases where development projects failed because of faulty design and the failure to include all stakeholders.

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Lop-sided involvement by development stakeholders: some empirical evidence

The case study on rural water supply strengthens the present argument on the importance of an inter-disciplinary approach to DS. Rogers (1995: 100–104) had cited Belasco's (1949) account of Egyptian villagers' reaction to a USAID-funded water project in the Nile Delta, ostensibly intended to overcome the water-related health problems in the area, which had failed to pay due consideration to their socio-politico-cultural lives and perceptions. Simply stated, although water was important to these people, the project failed! This account is given in Box 1.

Box 1: Pure drinking water project in Egyptian villages

The US Agency for International Development constructed a system of pumps and pipes that delivers pure, chlorinated water to public spigots in many villages in the Nile Delta . . . Belasco found that the technological innovation of piped, chlorinated water was actually not so effective or advantageous as it might at first seem to be. The piped water system was not such an appropriate technology for Egyptian villagers as health experts and sanitation engineers claimed. . .In fact many of the springs were intentionally broken by the villagers, who preferred constantly running water. . .

Belasco's respondents preferred canal water because the chlorinated water from the spigot tasted 'chemical' or 'medicinal' to them. Many believed that it weakened their sex drive. A popular rumor circulated that the government's unpopular family planning program had added chemicals to the piped water in order to decrease the rate of population growth in Egypt. . . Social reasons also explain why canal water was preferred by most female water-gatherers. The women congregated on the canal banks in order to wash clothes and dishes and to gather water, providing a social setting for the exchange of news and gossip. In comparison, standing in line at a water spigot was not a pleasant experience. . .

Clearly, the Egyptian villagers who reject the chlorinated, piped water and who drink polluted canal water are not so irrational as they might at first appear to be. One of the important contributions of diffusion researchers. . .is to illuminate *the complex nature of individuals' perceptions* (emphasis mine) of an innovation. Understanding such perceptions can provide useful lessons to technological experts. After all, it is individuals' perceptions . . . that count.

(*Source: Rogers 1995: 100–104*)

Rogers' account (Box 1) makes it clear that no disciplines are mutually exclusive. Prior investigations by other experts (such as anthropologists, sociologists, political scientists, etc.) before commencing the implementation of the water project by water engineers would, perhaps, have made a major difference. Another typical example of a failed water project is presented in Box 2.

Box 2: A Nigerian water project

A bore-hole water project was initiated by a Nigerian Military administration in the 1980s. Intending to alleviate potable water problems in rural communities but without due consultations with relevant social scientists and the community people themselves, bore-hole wells [provided with manual hand-pump devices] were sunk in villages across the country by the engineering division of the Directorate of Food, Road and Rural Infrastructure (DFRRI). It was originally believed that this water facility would be joyfully embraced by the beneficiaries (local people). Nonetheless, apart from the problems of careless handling and poor maintenance of the infrastructure, certain community people would not use it. For instance, in Badagry community of Lagos State, most men [husbands] felt that the hand pumping machine served as a time wasting technology that would no longer allow their wives to attend adequately to other vital household chores. This generated some palpable conflicts in various households within the community. Thus, the project was labelled *wahaladabule*, which is literally interpreted: 'problem has come to the village'!

(*Source: Kolawole 2001: 14*)

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The case study in Box 2 points to the problems that can arise as a result of isolated efforts in the development process. First, the decision-making and project-implementation framework was lop-sided: some of the key players who knew the dynamics and sociology of rural communities were not involved. Second, the primary clientele (rural communities) were also left out of the process. Thus the water project was foreign to them, and as such they felt no sense of ownership. Moreover, the 'alien' project contradicted family norms and rules. Thus what should have been a novel initiative became a nebulous effort in the long run.

The third case study, presented in Box 3, based on knowledge gained from the author's personal experience, is another example of a lop-sided policy formulation and implementation by development agents in the Nigerian agricultural sector. First-hand opinions were directly obtained from smallholder cassava farmers as a basis for this case study.

The scenario in Box 3 provides another example of how a development project or programme becomes dysfunctional when all the necessary parts are not properly integrated and working towards the stipulated development goal. No government in a developed economy would overlook the essential role of extension in its agricultural policies. Seen as an important engine for development, agricultural extension agencies are empowered to carry out their statutory role of creating a link between research, farmers, and households. The Nigerian case presented in Box 3 shows a typically lop-sided approach to agricultural development which lacked the necessary framework for project sustainability.

Box: 3: A Nigerian cassava initiative that dampens farmers' morale

In its bid to diversify the economy from the monolithic tradition of crude-oil production, the Nigerian government under the civilian administration of Chief Olusegun Obasanjo (1999–2007) attempted to enhance the country's agricultural productivity through its root-tuber expansion programme (RTEP). As cassava is a major staple, boosting peasant-farmer production was seen as a plausible idea. Working in conjunction with the government, the International Institute of Tropical Agriculture (IITA), headquartered in Ibadan, went all the way to develop technologies that would enhance value-added cassava products. Smallholders were then encouraged by the government to embark on large-scale production of cassava, with a promise to promote and find markets for these products. Nonetheless, an essential component was missing in the initiative. While agricultural economists, in conjunction with agronomists and other scientists, played a prominent role in the process, there was no adequate recognition accorded to the agricultural extensionists in project implementation. This automatically created a wide gap between research, farmers, and markets. As those trained to understand the dynamics of farmers' socio-economic and cultural lives and their other needs were left out of the process, the smallholders eventually had bumper [cassava] harvests but no meaningful market outlets for their farm produce. Apparently exacerbated by poor processing technologies, the lack of demand for their raw produce resulted in ridiculously low sale prices, which then depressed future expansion and production. In other words, as there was no ready market for their produce, peasant farmers' returns on investment plummeted, and their hopes and aspirations were dashed! This unwholesome experience was enough to dampen farmers' morale and their wish to continue with [the] extensive cultivation of cassava in subsequent years.

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That said, it would be naïve to think that social scientists and other expert (educated) elite hold sole responsibility for taking development initiatives. Rather, the 'elite' academics and researchers need to engage the intended beneficiaries in participatory research. Within that space, grassroots people are allowed to take the driving seat in determining what needs to be researched, and what programme to implement. This approach has been advocated time and again (e.g. Kolawole 2009; Chambers 2005; Kolawole 2001: 13–15). For instance, participatory methodologies in agricultural research enable the researchers and farmers to learn together in an atmosphere of mutual trust and respect. It would be too simplistic to think that such a process will be straightforward. Perhaps the question to ask is: are there any lessons to be learned from the experiences of collaborative research endeavours involving Western-trained scientists and academics within diverse disciplines *vis à vis* the vertical power relations among these collaborators and other stakeholders, such as farmers, policy makers, and donors at the frontiers of knowledge production?

As highlighted in the introductory section, if academics and researchers working in the general field of agriculture, for instance, have different opinions about themselves and each other (based on their various traditions and methodologies), the working relationships among other distant but cognate disciplines can only be imagined. Of course, there are lessons to be learned. Indeed, a healthy working relationship between social and natural scientists in agricultural discipline, for instance, does create a better pathway for understanding the socio-economic and cultural dynamics of the farming constituency whose lives they all seek to enhance. Certain 'transforming exchanges' naturally occur when, in the process of collaborative research, natural scientists seek to learn from their social-scientist counterparts, and *vice versa*. Thus, the

horizontal interactions among educated collaborators enable the natural scientists – who by virtue of their training tend to be preoccupied with microscopes and chemical reagents – to better appreciate grassroots knowledge in agricultural development.

Although caught between certain biases,[4] natural scientists with some prior working relationships with social scientists can better appreciate the smallholders' viewpoints and situations in their vertical relationships with donor agencies, policy makers, and the grassroots constituency itself. In other words, trustworthy and meaningful horizontal exchanges among experts of diverse backgrounds facilitate better working relationships between them and other stakeholders who wield varying degrees of power in decision making. Stakeholders' perceptions of what constitutes a problem and how to solve it are better appreciated where all collaborators have the space to act with a high degree of responsibility. As earlier indicated, the 'ideal' scenario in the all-encompassing concept of cross-disciplinarity becomes evident when the research agenda and methodologies deployed in achieving it are technically feasible and generally acceptable to those engaged in the enquiry. Again, this is trans-disciplinarity.

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Conclusions

This article has attempted to provide the key features of development and development studies as a discipline, followed by a critical analysis of four inter-related concepts of disciplinarity, presenting trans-disciplinarity as the most appropriate mix in the context of development practice. The article went on to analyse the relationships between inter-disciplinarity, DS, and development practice, illustrated by case studies on water and agricultural projects showing the problems that can arise when there is a lop-sided mix of development professionals.

The organic solidarity approach of Emile Durkheim[5] (1858–1917) proves a classic model. To achieve development objectives, it is imperative that all cognate disciplines work towards congruence, and particularly so for development practitioners. Policies are influenced by research, and *vice versa*. Knowledge production needs to be thought of as a set of industrial activities where division of labour is the driving force for producing physical goods and services. The manufacture and delivery of an automobile, for instance, requires the efforts of many specialists doing their bit in the assembly line. The agenda remains unfinished if the car engine does not run. Therefore, every concerned individual, from policy to research and implementation, needs to *zealously* play his or her own part to ensure that, in the end, the 'engine' runs properly. In the words of Kanbur (2002: 484), therefore, '. . .''sequential mixing'' was preferred, where each approach would do its best, learn from other approaches, adapt these lessons, and then do its best again'. And of course, there can be no better reward than for people with different academic backgrounds and training to work in unison and then synergise intellectual ideas, with the ultimate aim of producing great results. Elsewhere, the inspired Word also affirms: '[t]wo are better than one; because they have a good reward for their labour' (Ecclesiastes 4: 10, King James Version).

Notes

1. This article is an improved version of a paper entitled 'The Contribution of an Interdisciplinary Approach to Development Studies' (Kolawole 2007), submitted in part-fulfilment of the MA in Development Studies at the Institute of Development Studies (IDS) in the University of Sussex. I have chosen 'inter-disciplinarity' rather than the preferred 'trans-disciplinarity' in the title for two reasons. First, it appears that most authors and development practitioners hold strong opinions about the appropriateness of this approach. Second, it provides a good platform for a proper critique of some of the viewpoints on the concept.

2. My undergraduate training was in general agriculture, with a partial specialisation in agricultural extension and rural sociology. My further degrees were in the field of agricultural extension, but with a research interest in rural sociology. My quest to better understand international development issues later informed my desire to embark on the MA in Development Studies at IDS.
3. See Andy Sumner's (2006: 644–5) work on a brief history of DS.
4. Robert Chambers identifies certain biases of development researchers, among which are 'project', 'person', and 'professional' biases. Prejudiced by the desire for research grants, researchers are wont to go the way of donor agencies in order to get funding for their proposed enquiries. This is a 'project bias'. They are thus influenced by the dictates of the funding bodies, and not by their own personal convictions! It is also common knowledge that researchers tend to gravitate towards influential people within the communities where they carry out their investigations, such as village elders, opinion formers, and religious leaders, as well as paraprofessionals; and towards adopters of services or innovations, rather than those who are non-adopters. A 'professional bias', on the other hand, drives the researchers to look for and stick to some ideals and values informed by their training backgrounds (2006: 28–33).
5. Emile Durkheim (1858–1917), an evolutionist, sees societies as evolving from smaller communities with *sameness* features and thus with minimal division of labour (Mechanical solidarity) to differentiated, complex societies with high division of labour and job specialisation (Organic solidarity). Here, it is expected that each specialist plays a crucial role in ensuring a functional social system.

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