THE NATURE OF EPISTEMOLOGY AND METHODOLOGY IN DEVELOPMENT STUDIES: WHAT DO WE MEAN BY 'RIGOUR'?

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Abstract: Epistemology and Methodology in Development Studies are a special case. Due to the nature of the subject matter, the simple transposition of generic social science concepts and methods onto developing countries is often problematic. This paper is concerned with the distinctness of development studies and what this implies for 'rigour' in development studies research. The paper takes a journey, stage-by-stage, through the research process: specification of problem and research question(s); epistemological and ontological stance; research design; collection of data; and analysis and findings. At each stage, epistemological and methodological issues are noted that make development studies distinct, focusing the discussion throughout on what this means for 'rigour' in Development Studies research. It is argued that many generic concerns in social science concepts and methods are amplified in a developing country context and that this creates a heightened need for attention to 'rigour' in terms of research design and epistemological stance, replicability, interpretation and conclusions.

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1. INTRODUCTION

Over the last few years, Development Studies (DS) has entered a period of soul-searching to identify its distinctive and defining characteristics.[1] In the UK this process has been stimulated by the recent announcement of a stand-alone Development Studies sub-panel for the 2008 Higher Education Research Assessment Exercise and the likely benchmarking of Development Studies degrees next year by the UK higher education Quality Assurance Agency.[2] In light of these developments in teaching and research it would seem an opportune time to discuss the nature of DS both conceptually and epistemologically/methodologically. The former is the focus of Tribe and Sumner (2004) and the latter is the focus of this paper.

The concern of this paper is with the two central components of DS. Firstly, epistemology in DS – how do we know what we know in DS? Secondly, methodology in DS – what is a 'rigorous' process for knowledge creation in DS? The answers to these questions play an important part in research and teaching and identify the distinctive nature of DS.

The paper takes a journey through the research process in DS identifying at each stage the distinctiveness of DS and what this means for 'rigour' in DS research. In the opening section, the epistemological point of departure in DS is addressed. This is then followed by a stage-by-stage journey through the research process in DS: the problem identification and research question specification; the ontological stance; the research design; the collection of data; and the analysis and findings.

2. THE EPISTEMOLOGICAL POINT OF DEPARTURE IN DS

Development Studies is often thought of as falling firmly within the area of social sciences. However, given that DS is centrally concerned with the poor, the overwhelming number of whom reside in rural areas, work in agriculture, and rely on an interaction with natural resources, clearly natural science is also of importance (Molteberg and Bergstrøm, 2002a: 25; Morton and Martin, 2004: 4). Taking an even wider perspective other technical areas are also of relevance, such as the engineering logistics of service delivery and its distributional

[1] This can be seen in recent special issues of journals covering the matter (see in particular, the articles by Shaw and by Loxley in *the Canadian Journal of Development Studies*, 2004, 25:1; Kanbur, Harriss, Jackson and/or White in *World Development*, 2002, 30:12; Maxwell in *the European Journal of Development Research,* 2003, 15:1; and a number of 'progress reviews' including *Developments*, 2000, 43:2, 43:4; and *the Journal of International Development*, 2004, 15:7).

[2] World Development has recently been established at A/AS level and significant interest already exists in secondary school teaching (QCA 2003).

impacts (such as engineering for water, sanitation and electricity provision). How DS studies deals with phenomena with differing ontological status is a central question to its distinctive nature and defining characteristics, as are the implications for epistemology and methodology.

Epistemology is the branch of philosophy that is concerned with the nature, origin, scope of knowledge and 'how we know what we know'. From Plato's *Theaetetus* dialogue (Plato, 360 BCE) onwards the question of what is knowledge, or what constitutes knowledge, has been a major area of philosophical inquiry. DS draws on both the empiricist basis of knowledge (knowledge as human experience) as well an instrumentalist basis (our perceptions do not necessarily reflect the real world but are useful instruments to explain our experiences).[3] The former, empiricism lends itself to a positivist epistemology for knowledge creation and meta-narrative modernism while the latter, instrumentalism, lends itself to constructivist epistemology for knowledge creation and the post-modern critique.[4]

Is DS an objective, natural science-like search for one 'truth' or is it a subjective, constructivist search for many 'truths', or is it perhaps both? What constitutes legitimate research goals and research practices in DS? Epistemology provides the philosophical underpinning – the credibility – which legitimises knowledge and the framework for a process that will produce, through a 'rigorous' methodology (consisting of the full range of research methods), answers that can be believed to be valid, reliable/replicable and representative/typical. Credibility is, of course, important in any academic discipline, but even more so in DS because of the relative infancy of DS as a distinct field of study (by comparison with more established fields of study) emerging recognisably only in the last fifty years.

DS has a wide range of epistemological perspectives to choose from in both the natural and the social sciences. At one end of the spectrum lies positivism and at the other end lies constructivism: sitting in opposition as differing perceptions of the objectives of academic inquiry and of the creation and generation of knowledge. Both are concerned with what constitutes legitimate intellectual goals and practices (see Table 1). Across every conceivable fault-line the two approaches sit diametrically opposed, raising numerous issues for DS such

[3] This is somewhat different to the use of 'instrumentalism' in economics which refers to the arguments put forward by Milton Friedman that theories should be judged not by their assumptions but by their predictions and even if assumptions are known to be false they can still be useful as a stepping stone to more valid theories.

[4] For a useful reference source see the on-line Stanford University Encyclopaedia of Philosophy at http://plato.stanford.edu/

as triangulation, agnosticism, and determinism (closure) which are taken up below and in Cameron (2004).

Table 1: Points of contrast: Positivist and constructivist approaches

	A positivist approach	*A constructivist approach*
What is 'reality'?	A definable 'reality' or 'truth' exists and is observable	There is no 'reality' or 'truth' beyond our experiences
What is the goal of academic enquiry?	Acquisition of the 'truth'	A more informed construction of the world
How are the researcher and the 'researched' related?	The researcher is independent of the 'researched'	The researcher is not independent of the 'researched'
What should be the role for values?	None - objectivity sought	Part of 'reality' - subjectivity celebrated
What kind of approach?	Predominantly based on observability or measurability and with the aim of seeking 'evidence'	Predominantly based on discourse and meaning with the aim of seeking a more informed understanding of the world
What kind of data is preferred?	Predominantly quantitative	Traditionally associated with a predominantly qualitative approach
Examples of such studies in Development Studies	Dollar and Kraay (2002) *Growth is Good for the Poor*	Narayan *et al.,* (2002) *Voices of the Poor*

Note: The characteristics set out in this table are regarded as tendencies rather than as absolutes. The two examples have been abbreviated as *Growth is Good for the Poor* or "Dollar and Kraay" and *Voices of the Poor* or "Narayan" throughout the remainder of the paper.

Positivism is ontologically posited on the contention that reality and universal 'truths' are observable. Academic inquiry is the search for these 'truths'. These 'truths' can be observed in an objective and independent manner by the researcher, uninfluenced by the researcher's values and assumptions. This appeals to the natural science element of DS, a scientific search for 'truth' through objective, experiments usually based on a quantitative (i.e. measurable) approach. For example, econometrics is one technique derived from such a positivist approach, of which Dollar and Kraay's (2002) *Growth is Good for the Poor* is a good illustration (see Box 1). This study was based on the logical positivism credentials of econometrics: a 'view from above' of one, quantitative and objective 'reality', with verification through quantitative testing of hypotheses.

The philosophy of (logical) positivism is associated with the 1920/30s work of Moritz Schlick, Rudolf Carnap, Otto Neurath and Hans Reichenbach amongst others.[5] Within the positivist epistemology, a quantitative approach is often taken to be more 'rigorous' (this point is developed further in the following section – The Research Process in DS). Within the logical positivism framework there are only two forms of knowledge: logical reasoning and empirical evidence (i.e. refutable/testable propositions). The former is *a priori* and the latter *a posteriori*. The former is synthetic and the latter analytic. Advocates argue that research must

[5] For discussion of their work see Giere and Richardson (1997). In a later generation Karl Popper would fall into the same category (1968).

satisfy the standard natural science model of observable phenomena and the 'verification principle': If a statement cannot be tested it is of no consequence, and is not of any research interest, and a statement is only meaningful if it can verified by reference to logic or evidence.[6] Knowledge is only produced through scientific method. It is assumed that an objective reality can be described through measurement and quantification (i.e. 'observed') and that the 'reality' is both independent of the researcher and of the instruments of research, reflecting the importance placed upon the replicability of experiments and the objective position of the researcher in the natural sciences.

A prominent concern to DS from this approach is the role of measurability of social phenomena and the widespread use in DS of proxies. Proxies may be imperfect not only in terms of whether they conceptually capture the phenomenon in question but also empirically, in terms of the quality and accuracy of what is captured.[7] Dollar and Kraay use an 'income' definition of poverty derived from data in household surveys. Such surveys tend to record 'expenditure' and consumption rather than income and under-reporting is often a problem.

Constructivism is posited ontologically on the premise that reality, the world, as the subject of research does not exist independently from our experiences. In addition, constructivism argues that multiple realities exist which are intangible, local and specific in nature. The concept of a single 'truth' is meaningless, as is any project to accurately describe the world. All claims to 'closure' are suspect. Academic research should strive towards ever more sophisticated, informed and inclusive constructions of the world through the interaction of the researcher and the researched (Molteberg and Bergstrom, 2002a: 21). The constructivist approach appeals to the social research component of DS – a subjective search for meaning and understanding of the human condition. A recent and well known example is the *Voices of the Poor* study by Narayan *et al.* (2002). This study is based on the epistemological credentials of a social constructivist, anthropological approach to research with a 'view from below', of many subjective and generally qualitative 'realities'. The philosophy of social constructivism is associated with the 1960s work of Peter Berger and Thomas Luckmann and later, Karin Knorr Cetina and Bruno Latour.[8]

[6] According to the Oxford English Dictionary, the word 'evidence' originates from the Latin *evidentia*, from *evidens* meaning 'obvious to the mind or eye'.

[7] 'Dummy variables in regression analysis come into a similar category to 'proxies' in this context.

[8] For further discussion see Berger and Luckmann (1966) and Hacking (1999).

Box 1. Contrasts in Development Studies: "Dollar and Kraay" and "Narayan".

David Dollar and Aart Kraay are two World Bank economists, who have published a number of studies using cross-country quantitative analysis based on econometrics. *Growth is Good for the Poor* was originally released as a World Bank Working Paper (Dollar and Kraay, 2000). The Working Paper was a background document for the World Bank's *World Development Report* 2000-2001 on Poverty (World Bank, 2000). *Growth is Good for the Poor* (2002) argues that it has provided 'evidence' (the word was used 37 times in the study) to support the proposition that not only is growth good for the poor, but that the policies pursued by the IMF and World Bank have been good for the poor because they have led to growth. Although the paper has faced sustained methodological criticism (see for example, Amann *et al.,* 2002; Nye *et al.,* 2002; Rodrik, 2000) few have disagreed with the main finding that the income of the lowest quintile in the income distribution rises proportionally with average per capita income growth.

The Narayan *et al.* (2002) participatory poverty assessment was also carried out by the World Bank, and much of the analysis was included in the *World Development Report* 2000-2001 (World Bank, 2000). It was one of the World Bank's most ambitious studies to date covering 60,000 poor people in more than 60 countries. The study had two components, and was carried out with help from NGOs and independent research centres. The first part is a literature review of 75 participatory poverty studies from the late 1990s with coverage of 40,000 people in 41 countries. The second part consists of new studies in 23 countries covering 20,000 people. The studies sought to elicit poor households' perspectives on well-being.

In contrast to Dollar and Kraay, the poverty definition used in the Narayan study is much broader definition of poverty including non-economic dimensions of security, vulnerability and empowerment to name but a few. This difference in focus between the two studies represents a fundamental methodological division between purely economic concepts of poverty ('income' poverty) and broader concepts as used by the Narayan study. In essence, the possibility of finding an objective definition of the concept of poverty is questionable, and the objectivity of data may also be questioned.

The contrast of the *Growth is Good for the Poor* and *Voices of the Poor* illustrates how broad a church DS is epistemologically and methodologically (see Table 2). The Dollar and Kraay study was based on quantitative analysis of secondary data and on an experimental, natural science type method/technique, while the Narayan study was based on qualitative analysis of both secondary data and primary data from specially conducted household surveys. Dollar and Kraay's study was a descriptive-explanatory study (what is the relationship between x and y?), while Narayan's study is an interpretative study (what are x and y?). In sum, within the same academic field and sub-field (poverty) two quite different ends of the epistemological and methodological spectrums are counterposed.

Table 2. Epistemological and methodological stances in *Growth is Good for the Poor* and *Voices of the Poor*

	Growth is Good for the Poor	Voices of the Poor
Epistemological stance	Positivist	Constructivist
Methodological stance	Quantitative	Qualitative

For DS the epistemological battleground is much concerned with what is 'known' (and what 'known' means) and the relationship between the researcher and the researched.[9] Much of DS is normative: it is not concerned with knowledge creation for its own sake, but as an instrumental means of contributing to the improvement of natural and social conditions for the sake of improved welfare (Molteberg and Bergstrom, 2002a: 7). In this respect a middle ground of *realism* has been proposed by Molteberg and Bergstrom (2002a: 21). This epistemological stance distinguishes between physical reality (positivist) and human cognition (constructivist). The ontological basis of realism is that there is a physical reality that exists independently of our cognition but that we cannot appraise it – we can only describe it due to the fact that we are 'dependent' observers – not independent of events. Thus knowledge is a social construct but one which aims to explain a physical reality. The question of subjectivity-objectivity amounts to accepting that DS research is subjective and acknowledging that there is 'bias', some of which is acceptable and some of which is not. 'Rigour' in DS research means that it is necessary to distinguish between misinterpretation or omission which arises deliberately to bias the results in a direction which serves the purposes of the researcher (this being absolutely unacceptable), and acceptable, or acknowledged bias in values (such as recognising that poverty is a multi-dimensional concept) or data (where biases can be systematically identified). The research process is now reviewed stage by stage with a focus on 'rigour'.

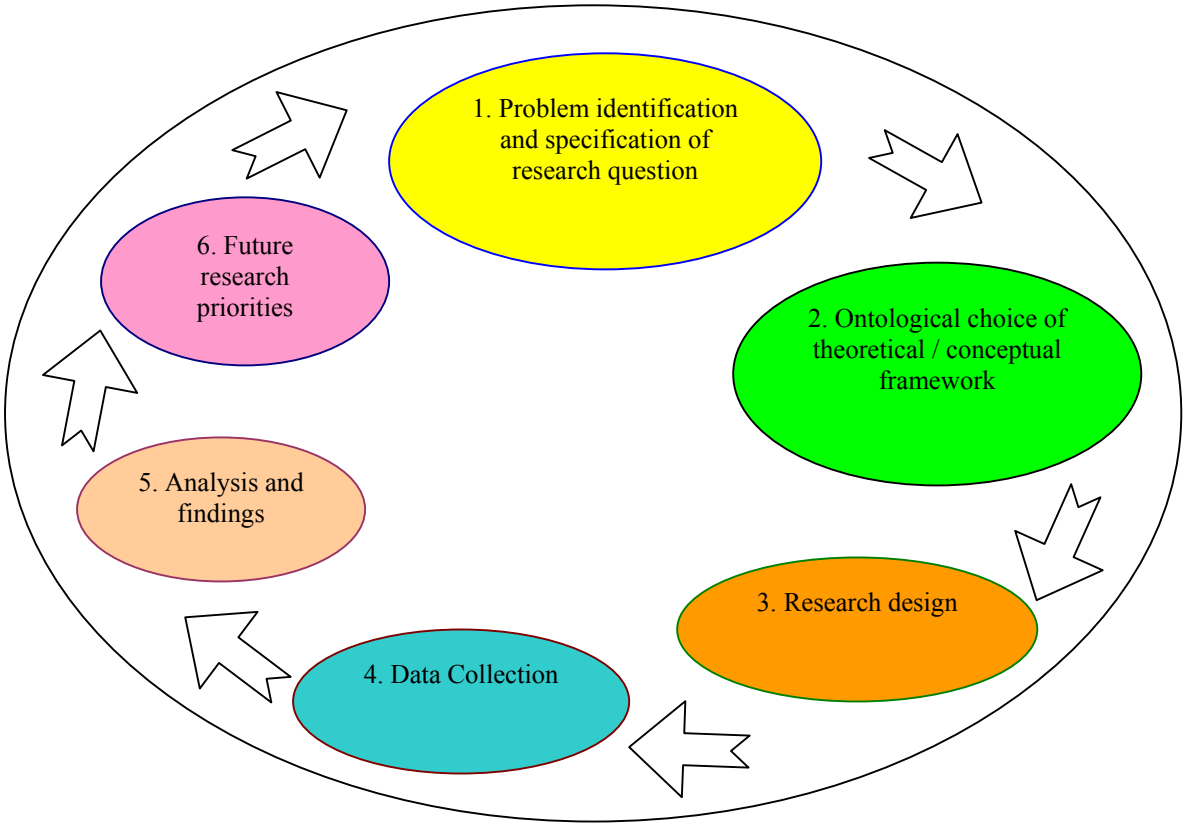
3. THE RESEARCH PROCESS IN DS

The research process, not least in DS, can be seen as a cycle (see Figure 1). Each stage leads to the next, drawing upon Galtung's (1967) approach to social research.[10] The first stage identifies the research problem and specifies the research question(s). The second stage involves the ontological choice of theoretical/conceptual framework and then the research design. The next stage is that of data collection, followed by analysis and findings. The final stage involving assessment of priorities for future research leads back to stage one in a complete cycle. Each stage is now discussed in turn.

[9] This battleground relates most to those types of research which involve the collection of primary data, although similar questions can be asked about secondary data – as for example in the case of the Dollar and Kraay study.

[10] DS has generally utilised generic social science methodology books (for example, Burns, 2000; Bryman, 2001; De Vaus, 2001; Denscombe, 2003; Fink and Kosecoff, 1998; Galtung, 1967; Gilbert, 2001; May, 2001; Punch, 1998;) arguably because there are few dedicated DS methodology books (other than Laws *et al.,* 2002; Mikkelsen, 1995; Scheyvens and Storey, 2003).

Figure 1. The Research Process in Development Studies



i. Problem identification and research question specification

The first stage of the research process is the identification of a problem. This is a search for a problem which is *researchable*. This starting point is rarely as 'rigorous' as one might think: as Cameron (2003:3) notes:

> [t]he start of the [research] process is socially haphazard. The individual researcher takes an unsolved problem from individual experience, from the existing literature, from a promising commercial opportunity, [or] from a sense of patriotism.

The research problem is often a choice of personal, organisational and/or funding priorities as to what is worthy of study. What constitutes a 'good' or 'rigorous' research problem? This might be considered from the point of view of what constitutes the PhD's 'contribution to knowledge' (see Box 2). The contribution has to be real and tangible and will be incremental to the existing body of literature. Given that there are relatively few *totally* unresearched areas in DS, the focus has turned to taking existing problems and then developing the current

level of understanding further by reframing the research issue, by connecting hitherto unconnected phenomena, by collecting new up-to-date data (or reinterpreting old data), or by challenging orthodox beliefs with new or reinterpreted data.

Box 2. What Constitutes Originality in Development Studies PhD research?

A PhD course of study is distinguished from other study (notably an MPhil) because it is an 'original contribution to knowledge' and is identified as such in university postgraduate handbooks and in assessment criteria. It is also increasingly a period of research training. What is an 'original contribution to knowledge'? The Dearing (England, Wales and Northern Ireland) and the Garrick (Scotland) reports both recommended a unified framework for higher education qualifications in order to maintain qualification standards. The HEFCE QAA Framework for Higher Education Qualifications identifies a PhD award as follows:

'*Doctorates are awarded for the creation and interpretation of knowledge, which extends the forefront of a discipline, usually through original research. Holders of doctorates will be able to conceptualise, design and implement projects for the generation of significant new knowledge and/or understanding'*.

Refer to the Higher Education Funding Council for England – Quality Assurance Agency: website at

http://www.qaa.ac.uk/crntwork/nqf/nqf.htm

What does this mean in practice? A PhD research programme could relate to one of the following on a non-exhaustive list:
1. A new research problem
2. A new way of looking at an old research problem
3. An old research problem revisited with new data or theory/concepts
4. A challenge to orthodox beliefs

While the research problem relates to a general definition of an area, the aims and objectives of the research are specific and the research questions/hypotheses attempt to specify a feasible research project that effectively addresses the problem identified. Research is about setting and answering questions, and this especially so in DS. For example, what is poverty? Or is economic growth beneficial to the poor?

How are the aims and objectives and the research questions formulated? Aims tend to be a general focusing of the research problem into a sub-area of interest, and then objectives make the overall aims specific through research questions and hypotheses which identify the questions and statements which are to be answered and tested.

Research questions may be interpretive (what is x?); descriptive (how does x vary with y?) or explanatory (does x cause y?). What constitutes a 'rigorous' research question? Qualities that might be highlighted here are the alignment of the question with the problem; whether similar research has been done already; building on current understanding; the clarity of the question (is it phrased in a clear, operational form?); the scope of the question (is it too much to answer within the study's constraints or is it too broad to be meaningful?); the feasibility of

being able to answer the question or hypotheses (time, resources, accessibility of data); the implications of the question for the independence or otherwise of the researcher in answering the question; and the nature of the relationship between the subject and the researcher. Additionally, there is emphasis in social science (and particularly in DS) on the policy relevance of research. If we take a research question such as "is growth is good for the poor?" there are clearly strong policy implications. Finally, the epistemological stance may be highly deterministic – is the research question verifiable – can it be proved true or false – or is it irrelevant? Table 3 indicates the research problems identified and research question specified in *Growth is Good for the Poor* and *Voices of the Poor*. Both have a clear problem identified, and have a focused, relevant, feasible and epistemologically derived research question.

Table 3. Research problems and questions in *Growth is Good for the Poor* and *Voices of the Poor*

	Growth is Good for the Poor	Voices of the Poor
Research problem	If economic growth is shared then there is no need to depart from an unmitigated growth strategy, but if this is not the case then different policies are required	Attempts at universal definitions of poverty have not included the meanings poor people place on their own situation
Research question	Does the income of the poor (bottom expenditure quintile) rise faster than average incomes in the process of economic growth?	What does being poor mean to poor people?

How does the identification of the problem and specification of the research question differ in DS compared to social or natural sciences? This is largely a matter of researchability. What is researchable in an industrialised country can be quite different to what is researchable in a developing country – notably in two areas: i) accessibility and reliability of data and ii) the nature of the researcher–researched relationship. The accessibility of both primary and secondary data in developing countries is often problematic: there are issues of gate-keepers and concerns over which data is and is not possible to collect and the validity, reliability and the extent to which the data collected is representative. Furthermore, the researcher–researched relationship is far more problematic if those involved in the research are at a completely different level of economic and political power. In sum, at this stage of the research process, 'rigour' refers to a focused problem and to the clarity, feasibility and researchability of the research question or hypotheses. From this starting point ontological choices over theory/conceptual frameworks can be made and the research design can be planned.

ii. Ontology, theory and conceptual frameworks in DS

Ontology refers to a set of basic assumptions about inter-relationships between phenomena within the world which is the subject of the research. It is an explicit specification of how phenomena are assumed to relate to each other. In DS ontology is an area of some ferment (see Appendix 1). The best known theories and frameworks – as taught to students of DS – Modernisation theory; Underdevelopment theory; Structuralism and Dependency theory, to name a few, are no longer widely utilised in contemporary research. Those largely positivistic (in terms of one 'reality') approaches have been replaced with a range of constructivist, conceptual frameworks to guide research in DS. Each with a unique purpose. The choice is between such frameworks as *Sustainable Livelihoods*, *Rights Approaches, Gender and Development*, and *Participatory Approaches*. Different theory is appropriate for different contexts and purposes. DS also 'imports' theory from constituent disciplines. For example, concerning the factors explaining changes in the income distribution in the process of 'development' from economics. Finally, perhaps surprisingly, some research in DS has been theory-less, presenting a risk of excessive description replacing analytical rigour.

iii. Research design

The research design is the operationalisation of the research question. This includes the specification of data required to 'answer the question' or 'test the hypotheses' and how this data is to be collected. This is a deterministic stage in research, even more so in DS because choices made at this stage shape what kind of questions and hypotheses can and cannot be answered. For DS a range of issues present themselves: all are concerns in social science but are amplified in DS research. They include how the focus of the research question is to be observed or measured? What relationship will be formed between the researcher and the 'researched'? and is the study to be objective or subjective?

Two questions can asked of the research question in order to inform a 'rigorous' research design. The first is an epistemological choice and the second is a methodological and methods choice. What kind of answer is the research question looking for? Are we looking for one objective answer or many subjective answers? And are we looking for a qualitative or for a quantitative answer, or for both? The type of research question will determine the epistemological and methodological approaches to be selected. Indeed, the choice between the two depends on what answers are sought. It is somewhat of an over generalisation, but

descriptive (how does x vary with y?) and explanatory (does x cause y?) type research questions are associated with *positivism* and *quantitative* research due to perceptions of its objective nature, while interpretive (what is x?) research questions tend to be associated with *social constructivism* and *qualitative* research due to its more subjective nature (Mikkelsen, 1995:213).

A positivist approach tends to be more quantitative, and based on published secondary data from official sources.[11] It seeks one observable, verified, aggregate, objective, 'truth'. In contrast a constructivist approach has a tendency to be associated with a more qualitative, and based on primary data collected specifically for the research in question. It seeks a 'view from below' of many 'truths'. The choice is objective truth (positivist) vs. subjective meaning/interpretative (social constructivist) or some attempt to triangulate both. If the research question demands generalisations then positivist epistemology and more quantitative methodology may be more appropriate. On the other hand, if the research question demands an attempt to understand and explain social phenomena then a social constructivist epistemology and more qualitative methodology may be more appropriate.

The objective-subjective question is of interest to DS and relates to acceptable and unacceptable bias in research. Table 4 outlines examples of bias in primary and secondary research in DS. Bias can be introduced by the researcher, by the 'researched' or by the research process.

Table 4: Types of Bias in Development Studies

Bias introduced by researcher	Personal values Design of research – specification of research problem Rejecting evidence that does not support hypothesis
Bias introduced by the 'researched'	Under-reporting Imperfect recall Responding on behalf of others
Bias introduced by the research process	Availability of accurate sample frame Imperfect access to data 'Interviewer influence'

Are quantitative methods more 'rigorous'? White (2002: 512-3) argued that different techniques are appropriate for different settings and that there is a prevailing presumption (in economics at least) that quantitative methods are more 'rigorous' than qualitative because they are perceived as less subjective and more tangible, and qualitative methods are perceived as being more subjective and thus less 'rigorous'.[12] However, White challenged this and

[11] Some data – for example, national accounts data – cannot be collected on a primary basis by researchers, thus some types of research are dependent upon official sources.

[12] But, for example, see Olsen (2003) for an empirical view of how qualitative research can be made more rigorous and systematic.

called for synthesis between qualitative and quantitative methods. He noted that the basis for claims to 'rigour' relates to how the techniques are applied; that badly applied qualitative and quantitative approaches could lead to inaccurate conclusions and different techniques suit different purposes. Table 5 outlines the strengths and weaknesses of quantitative and qualitative approaches.[13]

Table 5: Quantitative and Qualitative Approaches: Which is More 'Rigorous'?

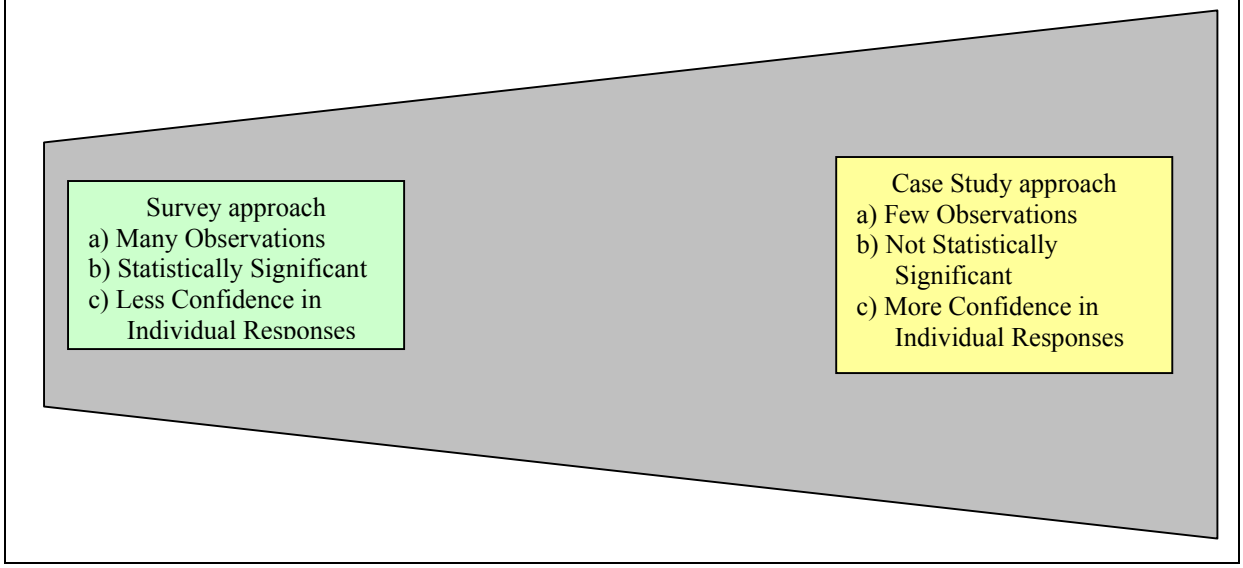
Quantitative		Qualitative	
Strengths	*Weaknesses*	*Strengths*	*Weaknesses*
Representative	Lack of validity	Validity	Unrepresentative
Reliable	Shallow/'thinner'	Depth/'thicker'	Unreliable
Objective?	Closure?	Lack of closure?	Subjective?

The methodology of the study relates to how methods combine to generate the research data which forms the response to the research question. There is a wide range of approaches utilised in DS data generation and collection including surveys, case studies, experiments, action research and ethnographic approaches. Of course, none of these approaches is perfect. Validity, reliability and the extent to which data is representative differ across approaches on a depth vs. breadth/generalisability trade-off, or a 'thicker' versus 'thinner' description. One might imagine a spectrum with 'thinner' descriptions at one end and 'thicker' at the other end (see Figure 2).

Case studies have significant depth in the data created but little breadth or generalisability – and are nearer the 'thicker' end of the spectrum. In contrast, surveys have wide breadth and limited depth and are nearer the 'thinner' end of the spectrum. In a 'rigorous' research design the research question should guide the choice of approach. Descriptive (how does x vary with y?) and explanatory (does x cause y?) type research questions might tend to 'thinner' approaches such as surveys. In contrast, an interpretive (what is x?) research question would tend towards 'thicker' approaches such as case studies.

[13] A good example is the dominance of quantitative measures of poverty (especially income). It could be argued that the dominance of economic measures is based on the preconception that economic measures are more precise and objective because they are amenable to quantification. They are tangible – consumption of a certain amount of rice in kg can be recorded (assuming there are no recall and respondent bias). In contrast, non-economic measures are somewhat less amenable to quantification and rely on more tenuous and subjective proxies – for example equating being 'educated' to the subjective concept of 'literacy'. It is perhaps assumed that what is more amenable to quantification is more objective (i.e. the same to all people). For example, one kg of rice or one dollar-a-day is the same to everyone. However, it could be argued this would be a false proposition because the gain or loss of a dollar or a kilogram of rice has a different welfare impact on a poor/hungry person than someone else better off/not hungry – the principle of diminishing marginal utility of consumption.

Figure 2. Thinner and thicker descriptions



What determines choices over methods/techniques to be used to collect the data? DS uses a range of methods: in primary data collection, interviews, questionnaires, and observation are used, while in secondary data collection, official statistical data and documents tend to be used. Typically, combinations or triangulation are proposed to overcome the validity weakness in quantitative methods and in the reliability and representative weaknesses of qualitative methods. Indeed, given DS claims to multidisciplinarity the mixing of methods is common. Multiple methods are useful to corroborate and ensure validity, not providing proof but improving consistency across methods in a process of triangulation.

In terms of choice of methods, the research question is again deterministic in ensuring a 'rigorous' approach. The questions to be addressed are: what kind of data are required? What are the practical considerations (time, resources and access), how is the focus of the research question to be observed/measured, and to what extent can proxies be used in place of direct measurement of variables?.

Descriptive (how does x vary with y?) and explanatory (does x cause y?) types of research question might tend to quantitative analysis – especially with secondary data. In contrast, an interpretive (what is x?) research question might tend more to qualitative methods approaches – especially with open-ended interviews.

The final methods decision is what unit of analysis – country level, regional, community, household or intra-household level? Each has implications not only for the type of data to be collected but also for aspects and nuances of the data that might not be captured, such as intra-household inequality.

Table 6 shows the research designs of *Growth is Good for the Poor* and *Voices of the Poor.* In *Growth is Good for the Poor,* the epistemology was positivist, the methodology quantitative and the data analysis involved econometric regression using 285 pieces of secondary data from 92 countries. Dollar and Kraay's research design has been criticized for a lack of 'rigour' on the grounds of using of cross-country data (with little use of cross-temporal data) to investigate a temporal relationship (of the 92 countries only India, Mexico and Sri Lanka had some time series data); that the sample did not differentiate between developing countries and developed countries, and that the lowest expenditure quintile is not a good proxy for the poor (those below the poverty line).[14] In contrast, in *Voices of the Poor* the research design was within social constructivist epistemology because it involved interpreting how poor people themselves understood the phenomenon of poverty. It will be recalled that this study assembled data based on i) a literature review of participatory poverty studies conducted in the late 1990s (secondary data), and ii) a series of original participatory poverty studies in 1999 (primary data) using interviews and focus group discussions.

Table 6. Research design in *Growth is Good for the Poor* and *Voices of the Poor*

	Growth is Good for the Poor	Voices of the Poor
Research design	- Econometric regression - 285 pieces of secondary data from 92 countries covering four decades - Data on economic growth, income poverty and income inequality	- Participatory poverty studies from primary and secondary - 60,000 people in 60 countries - Data on perceptions of a good life; most pressing problems and priorities; quality of interactions with institutions; and changes in gender and social relations.

In summary, 'rigour' in the context of research design consists of the following of a logical, integrated process. The research question leads to a choice of epistemology, leading to choice of methodology, leading to a choice of data collection/sources, leading to choice of data analysis methods. Thus the appropriate epistemology, methodology, data sources, and analytical methods/techniques needed to answer a particular research question have to be selected with great care. Arguably research design in DS requires far more care than is usual in the natural or social sciences because of the difficulties in accurately capturing the social phenomena in question, the feasibility of the research, and how this constrains DS methods. These issues are pursued further in the next section.

[14] For a full critique see the studies noted in Box 1.

iv. Data Collection

The data collection stage is the operational stage when the methods chosen are used to create the data that will be analysed in the final stage. As a point of departure, data collection through either primary or secondary methods must relate directly to the research question or hypotheses if it is to directly and unambiguously answer the objectives of the research. Arguably it is at this data collection stage that 'rigour' is most crucial and most contentious. The data collection stage is particularly problematic for DS because it is at this stage that generic concerns of research methods in social science can be amplified.

The first issue is that of access to the data. For primary work this means access to the sample, and for secondary work, access to data and documents which already exist. Primary work creates a whole range of ethical considerations in terms of the relationship which will be formed between the researcher and the 'researched'. Questions to be addressed include who does the actual primary data collection – community members or outsiders? Accurate data collection might be based on well trained local researchers (if they are available) but beyond accuracy (perhaps due to over-familiarity of enumerators with respondents – the relationship can work both ways) a whole range of ethical issues present themselves. For example, gaining 'informed consent'; avoiding undue intrusion; safety of and risk to the respondent or researcher; guaranteeing confidentiality and anonymity; fair returns and reciprocity with respondents and addressing raised expectations that research (for example on poverty) may bring; explaining the purpose; cultural influences and language differences; attention to sensitive issues and legal issues.[15] Because of this long list of ethical concerns in primary research, many UK universities now have a research ethics committee that all primary research involving personal data collection must go through.

It can be argued that 'rigour' at this data collection stage refers to: (a) the close alignment of the data collection with the research question; (b) some reasonable precision in capturing the subject phenomena through standardised techniques and (c) attention to objectivity and subjectivity, to acceptable or unacceptable bias and influence or subjectivity.

The first issue is self explanatory. The data collection methods must generate data which is directly relevant to the research question and irrelevant material needs to be removed. The second is a particular issue in social science research and in any inquiry into human subjects.

[15] For more detailed discussion see Laws *et al.,* (2003: 233-247) and Mikkelsen (1995: 250-281) for example.

Proxies are often used for social phenomena that cannot be directly observed – the selection of 'indicators' involves questions of the extent to which data is accessible and representative. For example, the most commonly used (and arguably, the most controversial) indicator for poverty is the dollar-a-day line, which many researchers would regard as a proxy rather than as a direct indicator. There are various problems with this popular proxy, not least the fact that we cannot be sure whether a human being can live on this daily expenditure in all countries although we do know that an average human can survive on 2100 calories per day (Ravallion, 1998; Redde and Pogge, 2002). Another common income poverty measure which is used in *Growth is Good for the Poor* is the lowest expenditure quintile. This definition is inconsistent with measures based on numbers living below a minimum standard (the more common income/expenditure basis for the definition of poverty – based on 'headcount' measures). On the other hand, in *Voices of the Poor*, the capturing of poor people's own interpretation of poverty has a significant internal contradiction: to identify those who were poor, in order to interview them, a (universal) definition of poverty and existing poverty data were used in the construction of the sample frame and in the survey design. If the existing poverty data was questionable then the results of the study may have been biased, for example by asking the non-poor about the meaning of poverty.

The third issue is central to 'rigour': the question of acceptable/unacceptable bias. If the researcher has the responsibility for selection of appropriate data they may find themselves engaged in a range of decisions that are deterministic.[16] To illustrate this point, White (2002: 513) described two researchers: the 'data-analyst' and the 'data-miner'. The former lets the data tell the story and draws conclusions from the data, while the latter digs for data to support positions which have been decided before the 'research' started (see Table 7 for examples). If this could be seen as a spectrum with the 'data-analyst' at one extreme and the 'data-miner' at the other then where would most researchers fall? White, an econometrician himself, suggests that any reasonably competent econometrician could generate the desired findings given sufficient variables through a process of 'data-mining' – an example of unacceptable bias.

[16] Arguably peer review of publications is the means by which academics ensure 'rigour' here and throughout research.

Table 7. Examples of 'data-mining' in primary and secondary research

'Data-mining' in primary methods	*'Data-mining' in secondary methods*
Sample chosen to support hypothesis	Data source chosen to support hypothesis
Research instruments written to support hypothesis	Data inconsistent with hypothesis rejected
Data interpreted to support hypothesis	Data 'cleaning' - data unacceptable in various other ways is rejected

All of these issues apply to both primary and secondary research because both go through the same process, the difference being that the researcher has more control over primary data. In addition, there are a number of method-specific 'rigour' issues to contend with in DS that social scientists in industrialised countries need to take account of but not to the same extent. For example, in primary research, samples in DS are highly problematic due to incomplete official records (such as national identity card or electoral register) for the generation of a sample frame. Examples can be found where researchers have studiously constructed their own sample frames, rather than relying on previously available frames (e.g. Edusah, 1999; Mensah, 1999). Sampling errors are near certain and lead to under-representation of some groups in socio-economic surveys. In particular those without full 'legal status' may be more likely hidden. It is likely that a disproportionate number of 'hidden' households will be poor.[17]

Additionally, in a developing country setting, primary methods such as interviews, focus groups, questionnaires and observation may lack reliability and validity due to under-reporting and recall difficulties or to concern over the use of information. 'Interviewer influence' may be exacerbated by inhibitions and perceptions created by the interviewer-researchers such as dialect/accent, sex, age, class, education, formality, appearance, and/or ethnicity. Local socio-cultural factors may also influence responses: Household heads or village leaders may answer on behalf of respondents. Responses may be formed by culture, who is present, or what the respondent thinks the interviewer wants to hear.

In light of the above, what might a 'rigorous' approach to primary research in DS entail? In particular, the following non-exhaustive list can be specified: i) ensuring that the purpose of the research is clear (the instructions); ii) piloting of the research instrument to ensure that all questions are relevant to data needed, have a high level of clarity, are not leading (bias), are not vague and are well ordered; iii) that the questions are directly given to respondents, and that a full written or taped recording of the interview/observation is made. The overall

[17] For example, in Indonesia, Suryahadi and Sumarto (2001:15) noted: 'It is apparent that many… …do not possess Jakarta identity card and are not officially registered with the local authority as residents. Hence their existence is not in the survey data'.

objective is to minimise bias and to raise reliability and validity. Indeed the main concern with primary interviews is that they lack reliability – the interviewer may have influenced the answers or the respondent, for whatever reason, did not answer truthfully. One illustrative example for DS is the *Voices of the Poor* study, which might well have raised expectations about future aid. The only way to corroborate the validity of the interviews is to compare with other information. As Denscombe (2003:186) observed, *'[u]ltimately there is no absolute way of verifying what someone tells you'.*

Secondary research is also popular as a method in DS. In most developing countries secondary data and documents are cheap and readily available, and raw data tapes are often accessible. With respect to the quality of secondary data, one problem is the consistency across time and across changing definitions. The quality is open to question if it fails a basic test of consistency, and using data from different sources is highly problematic (all data would need to be standardised across all countries if complete consistency was to be achieved). For example, data presented on maternal mortality in the UNDP *Human Development Report* and World Bank *World Development Report* is not always consistent.[18] A non-exhaustive list of salient questions for reflection might include: How has secondary data been generated? Who collects them and for what purpose? How is the sample frame created? Who is omitted? What definitions are used? What are the data used for? However, whilst these points are important they may be regarded as being somewhat 'academic' when data availability is limited and the choice of indicators may be dictated by what is in existence.

Turning to the examples of *Voices of the Poor* and *Growth is Good for the Poor*, their approaches to data collection differs (see Table 8). *Voices of the Poor* was based on interviews and focus group discussions in two components, the first a literature review, the second a new set of studies in 23 countries. As noted by Narayan *et al.,* (2002: 19-20) the main problems in data collection were bias in interpretation and coding, the fact that the studies used differing sample frames, and that source studies were not necessarily intended for the purposes for which they were used. In contrast, *Growth is Good for the Poor* was based on secondary data and on econometric techniques. Dollar and Kraay's methods have been criticised for the fact that much

[18] Loup and Naudet (2000, p. 11) cite a comparison of maternal mortality rates in the *Human Development Report* (HDR) and *World Development Report* (WDR) in the mid 1990s. The WDR listed 56 countries with data and the HDR listed the same countries (minus one) and a further 48. Of the 55 listed in the WDR (and in the HDR) only a quarter were within a similar range – and a half were significantly higher and a quarter significantly lower as compared with the data in the HDR.

of the data used in the study's regressions were not recent data but from the 1970s and 1980s (Weisbrot *et al.,* 2001).

Table 8. Data collection in *Growth is Good for the Poor* and *Voices of the Poor.*

	Growth is Good for the Poor	Voices of the Poor
Data collection	- Secondary data (sources: World Bank data; UNU-WIDER database and other published datasets). - Technique - econometrics regression - For details see Dollar and Kraay (2002: 14-19; 44).	- Secondary data (source: literature review) - Primary data (23 surveys of 20,000 people. For details see Narayan et *al.,* (2002:253-268)

'Rigour' in data collection requires a highly reflective and critical practitioner. Ideally, data is available from a variety of different sources and methods so that it can be corroborated in analysis. This is the focus of the following section.

v. Analysis and findings

With data in hand the DS researcher enters the final stage of research, data analysis and findings – but what is data analysis and how does it form findings? Data analysis is the stage when the researcher takes all data collected and considers, examines, categorises and interprets. Then trends, regularities and patterns are identified and data tabulated in order to answer the research question and to test the hypotheses, and to present the data in a clear manner.

What constitutes 'rigorous' data analysis? The data which has been collected should be directly linked to the research question/hypothesis, and to objectives. The analysis may face criticism over subjectivity in analysis and interpretation (especially if qualitative data is collected in the local language – the connotations and cultural understanding of language are open to interpretation) or the strength of any findings made may be challenged.

Strictly speaking the distinction between qualitative and quantitative approaches is about analysis and the treatment of data rather than the actual methods (Denscombe, 2003: 231). Although in practice qualitative and quantitative analysis are not mutually exclusive, for the sake of identifying differing issues with regard to 'rigour' in analysis and different requirements for each, it is useful to consider them in turn.

For quantitative data the analysis can take the form of descriptive statistics or the interpretation of the outcomes from complex regressions. Issues that may be contentious

include the results from significance tests and claims about the direction of causality. In more complex modelling such as econometrics, these statistical issues of 'rigour' may extend to the instrumental variables used for endogeneity – disentangling causality (e.g. a positive correlation between capital flows and growth says nothing about the underlying causes and the direction of causation, but it is difficult to find variables which are not correlated to both capital flows and growth). Furthermore, there are differing ways of dealing with the simultaneity bias – the isolation of effects. Several elements present at the same time as capital flows may contribute to growth. Controlling for country specific effects and omitted variables are yet more contentious issues.

For qualitative data, the first issue is that a form of analysis has to be selected. There is a wide range of essentially post-structuralist analysis of language and meaning in qualitative analysis including discourse analysis, ethno-methodology, phenomenology, grounded theory, hermeneutic research, content analysis, life history studies, structural ethnography and symbolic interactionism. Then, usually but not always, a software package (such as the Ethnograph, NUD*IST, NVivo, winMax, ATLAS/it) is chosen and the research data is coded at word, line, sentence and/or paragraph level for concepts, patterns, regularities, systems, and themes. Clearly, this is a highly interpretative process and 'rigour' can only be taken to mean that all data is treated in the same way (aided by computer entry) and differing interpretations are recognised. Data analysis is not descriptive – 'x said this' – and should go beyond the face value of the data in order to seek meaning and context for an understanding and more complete answer to the research question.

In *Voices of the Poor* and *Growth is Good for the Poor*, data analysis and findings were as follows: in *Growth is Good for the Poor* the data analysis involved the interpretation of econometric output; in contrast the data analysis in *Voices of the Poor* was based on qualitative analysis of transcripts of interviews and focus group discussions (see Table 9).

Table 9. Data analysis in *Growth is Good for the Poor* and *Voices of the Poor.*

	Growth is Good for the Poor	Voices of the Poor
Data analysis	Interpretation of econometric output	Literature review and qualitative analysis of transcripts of interviews and focus group discussions

In *Growth is Good for the Poor*, the analysis has been criticised because the regressions were statistically insignificant with the exception of the one-for-one growth-poverty finding (Weisbrot *et al.,* 2001) and the study was misleading because few countries were near the

one-for-one average (Nye *et al.*, 2002: 12). In *Voices of the Poor*, the study explicitly recognised the likely criticisms over bias and subjectivity in analysis (Narayan *et al.* 2002: 19-20). This brings the debate through a full circle to epistemology in DS. Is DS a search for one 'reality' as Dollar and Kraay suggest or does the heterogeneity of experience make average values meaningless?

3. CONCLUDING DISCUSSION

Epistemology and methodology in DS are a special case. In epistemology, DS can range from a natural science-like search for one 'truth' to a subjective, social constructivist search for many 'truths' or both if the tenets of realism are accepted and the researcher is conscience of their bias. In methodology, due to the nature of the subject matter, the simple transposition of generic social science methodology and methods onto developing countries is often problematic. Many of the generic concerns in social science methods are more sensitive in development research. For example, concerns over the validity of research, the extent to which the results are representative, the reliability of data, and the subjectivity and interpretation of results are particularly problematical in developing countries, and ultimately the replicability of the research may not be certain.

In the light of this, what does 'rigour' in research mean for DS? From the identification of the problem and research question specification, through the research design and data collection, analysis and findings several themes predominate in DS. These include firstly, logical processes linking the research from start to finish with a coherent thread throughout. Each stage informs the next. Secondly, what constitutes acceptable and unacceptable bias/subjectivity. Having values is acceptable. Changing research to gain findings to suit those values is unethical. Finally, there exists a set of techniques and methods. The strengths and weaknesses are well known. Thus corroboration through mixing methods as appropriate and a reflective practitioner approach to the imperfections of research and choices made are signs of a 'rigorous' approach. Ultimately, if other researchers can see when and why appropriate choices were made and of these choices can be intellectually defended, then in an imperfect world the research journey will at least have been transparent and 'rigour' attended to.

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Appendix 1: What is 'development theory'?

From the 1950s to the late 1980s there was a stand-off between capitalist and non-capitalist development theory. On the one hand, capitalist modernisation theory (Rostow's anti-communist manifesto), was very influential in the 1950s/1960s. This was partly a by-product of McCarthyism and was also a reaction to fast industrialisation in the USSR and to concern that newly independent developing countries would follow a non-capitalist path. In contrast, the anti-capitalist/anti-imperialist Latin American neo-Marxism in the form of underdevelopment theory – structuralism and dependency theory – was very influential in the late 1960s/1970s and was instrumental in the introduction of the developmental state and import substitution industrialisation in many developing countries following independence from former colonial powers.

In the late 1980s Development Studies theory entered an academic impasse from which it has not been fully resuscitated. This was a stalemate between modernisation and underdevelopment theories and a result of deficiencies in those frameworks. Theories were criticised for their overriding belief in a linear, common path to development through economic growth and industrialisation. This belief became increasingly challenged as the homogeneity of the 'Third World' fragmented; as the meaning of development broadened and as the environmental impacts of industrialisation became more evident (Schuurman 1993; Sutcliffe 1999). Development theory also faced sustained attack from the post-modern critique of theory formation in social science (see Parfitt, 2002; Schuurman, 1993), for an over emphasis on the macro to the neglect of the micro (especially intra-household) and meso, and for the lack of empiricism and testability/refutability. Finally, the loss of the socialist paradigm at the end of the Cold War ended the link between development theory and practice. The impasse in development theory coincided with the resurgence of neo-liberalism in what became known as the 'Washington Consensus' consisting of reconstituted components of the 'modernisation project' synthesised with economic liberalism.

There is now an array of conceptual frameworks utilised in Development Studies. A conceptual framework does not seek to understand and explain everything in the way an overriding theory does, or necessarily seek prescriptions like a theory, but rather, as Hulme (2000:81) argues, to specify what is to be assessed or measured and at what level it is to be assessed and with some similarity to a theory, to model an impact chain. The chain explains some or all of the contributory factors to that phenomena under analysis, but does not provide an overriding meta-narrative to explain everything (see for discussion on diversity of

theories, Hunt, 1989). Post-impasse contributions have focused on broader definitions of development and in particular emancipation. Numerous conceptual frameworks have emerged in recent years including *Sustainable Livelihoods*, *rights approaches, Gender and Development* and *participatory approaches.* The only attempt at theory has been the anti-theory of *Post-development* – an application of post-modernism/post-structuralism to development that rejects outright 'development' as an imperialist discourse (see for a critical discussion, Kiely, 1999).