

The Co-Production of Gender and Technology in HIV Prevention Research

A Case Study of the Microbicides Development Programme



Catherine M. Montgomery

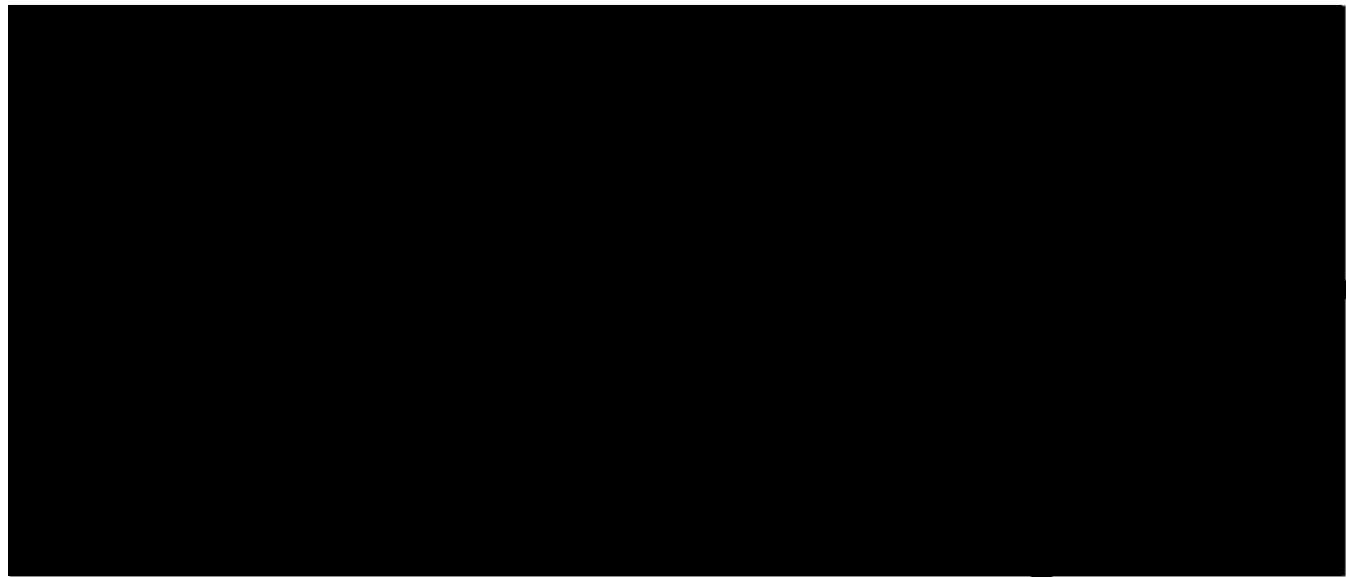
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Department of Public Health & Policy
London School of Hygiene and Tropical Medicine

Declaration

I, Catherine Montgomery, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed: 

Date: ...*16/02/10*.....

Abstract

Vaginal microbicides are pharmaceutical products in development that are designed to reduce the sexual transmission of HIV in women. They are commonly known as a 'woman-controlled technology' and tool for women's empowerment, and form part of a burgeoning field of clinical research into new biotechnologies for HIV prevention. Little work has critically examined how such research and new technologies are produced, and how they in turn contribute to the construction, maintenance or deconstruction of gender relations.

Adopting a Foucauldian understanding of power and discourse, and using theoretical insights from science and technology studies (STS), this research explores the co-production of gender and technology through the case study of vaginal microbicides. This account of the relations between science, society and technology draws on empirical research conducted in the UK and Zambia with the pharmaceutical industry, trialists, trial participants and trial communities. It interrogates the techniques of power through which transnational scientific networks are mobilised to test new products, such as microbicides, and how these affect scientific practices, knowledges and identities across socio-geographic boundaries. It attends to the potential multiplicity of interventions in diverse contexts, calling into question the presumed stability and singularity of both the randomized controlled trial and vaginal microbicides.

This research makes an empirical contribution to knowledge about new biomedical technologies for HIV prevention, detailing the transformation that may occur when technologies travel from their site of development to their site of use. It provides a detailed analysis of the interaction between gender performativity and science in action, challenging the sense of 'gendered' technologies for a 'feminized' epidemic. Theoretically, it contributes to debates about the role of social theory in public health research and reconstructivist agendas in STS, concluding with a model for greater collaboration between health technology designers, evaluators, critics, and users.

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First and foremost, thanks are due to the staff of the Microbicides Development Programme. During the course of this PhD, I learned a huge amount from colleagues, who were not only leaders in their field, but generous and deeply committed to HIV prevention. That the programme opened itself up to a study of this nature is testament to its desire to further knowledge and embrace different epistemic traditions. I am grateful both for the opportunity to use the Programme as a case study and for the support afforded to me during my fieldwork.

This thesis rests to a large degree on the discourses generated between myself and the diverse array of people who make up a large, transnational HIV prevention trial. It wouldn't have been possible except for the readiness of people to give freely of their time to talk to me. From trial participants to principal investigators, advocates to biochemists, pastors to statisticians – I am very grateful to all for co-producing the material for this research.

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Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
AMAG	African Microbicides Advocacy Group
ANT	Actor Network Theory
ARV	Anti-retroviral
AZT	Azidothymidine
CAB	Community Advisory Board
CM	Catherine Montgomery
CRF	Case Record Form
CTU	Clinical Trials Unit
DFID	Department for International Development
EPOR	Empirical Programme of Relativism
FGD	Focus Group Discussion
GAD	Gender and Development
GCM	Global Campaign for Microbicides
GCP	Good Clinical Practice
GDI	Gender-related Development Index
GPS	Global Positioning System
HIV	Human Immunodeficiency Virus
HSV	Herpes Simplex Virus
IAVI	International AIDS Vaccine Initiative
ICH	International Conference on Harmonization
ICPD	International Conference on Population and Development
IDI	In-Depth Interview
IDMC	Independent Data Monitoring Committee
INCITE	Incubator for the Critical Inquiry into Technology and Ethnography
IRMA	International Rectal Microbicides Advocacy
ISAG	International Scientific Advisory Group
FDA	Food and Drug Administration
FGD	Focus Group Discussion
LSHTM	London School of Hygiene & Tropical Medicine
MDP	Microbicides Development Programme

MSM	Men who have Sex with Men
MRC	Medical Research Council
N-9	Nonoxynol-9
NGO	Non-Governmental Organisation
NPT	New Prevention Technology
NRT	New Reproductive Technology
PEP	Post-Exposure Prophylaxis
PI	Principal Investigator
PMB	Programme Management Board
PMTCT	Prevention of Mother to Child Transmission
PrEP	Pre-Exposure Prophylaxis
QDAS	Qualitative Data Analysis Software
RCT	Randomised Control Trial
SCOT	Social Construction of Technology
SSK	Sociology of Scientific Knowledge
STI	Sexually Transmitted Infection
STS	Science and Technology Studies
TB	Tuberculosis
UK	United Kingdom
UNAIDS	Joint United Nations Programme on HIV/AIDS
US	United States (of America)
VCT	Voluntary Counselling and Testing
WHO	World Health Organization
WID	Women in Development
WAD	Women and Development

Chapter One

Introduction: Demystifying HIV Prevention Science

A quarter of a century of AIDS responses has created a huge body of knowledge about HIV transmission and how to prevent it, yet every day, around the world, nearly 7,000 people become infected with the virus. Although HIV prevention is complex, it ought not to be mystifying. (Piot et al. 2008: 845)

This thesis seeks to demystify; not HIV, or its prevention, but how knowledge about HIV prevention comes into being. Collins once wrote, “Knowledge is like a ship because once it is in the bottle of truth, it looks as though it must always have been there and it looks as though it could never get out again” (Collins 1985: vii). In this research, I have been present as one particular ship was built and erected in its bottle. Between 2004 and 2009, I worked for the Microbicides Development Programme on a clinical trial of the candidate microbicide PRO 2000. This innovative research programme provided an ideal location within which to examine HIV prevention science as a cultural activity rather than a source of certain knowledge. The current case study explores how science and society emerge as the joint achievements of human activity and, in the case of the HIV epidemic, what this means for prevention.

In the chapters that follow, I describe the process of defining my topic and research questions, before presenting my empirical findings. In this chapter, I will give a brief overview of the broader context in which this research took place, starting with the HIV epidemic and current prevention approaches. The aim here is not to provide a comprehensive review of the HIV literature, but merely to outline the scale of the problem and the field in which this case study is situated. In the same way, since this thesis is based on a case study of the Microbicides Development Programme (MDP), I will provide some background information on microbicides and the MDP. I conclude this chapter with a summary of the thesis.

HIV, AIDS and HIV prevention

At the end of 2008, an estimated 2.7 million people became newly infected with HIV, joining the 33.4 million already living with the disease. Of these new infections, 71% occurred in sub-Saharan Africa (UNAIDS 2009). Although important gains have been made in terms of treatment, with a tenfold increase in the number of people receiving antiretrovirals in low and middle-income countries over the past five years (UNAIDS 2009: 7), these gains are not matched by prevention. In fact, for every new person starting antiretroviral treatment, many more become infected (UNAIDS 2007c)¹. In 2008, Horton and Das observed:

From the very beginning of the global response to the AIDS pandemic, prevention has been marginalised. Treatment has dominated. This systematic imbalance is largely responsible for the fact that around 2.5 million people become newly infected with HIV each year. (Horton and Das 2008: 421)

Whilst the failure to prevent new infections has been attributed to lack of financial commitment², this simplifies a more complex picture in which the most trusted prevention interventions are at best unproven, and at worst disproven, for reducing HIV incidence (Wilson and Halperin 2008: 424); proven interventions reach only a fraction of those who need them (UNAIDS 2008c: 127); and the epidemic repeatedly defies predictions derived from epidemiological modelling (UNAIDS 2008c: 16). Three decades into the epidemic, much remains mystifying in and about HIV prevention science.

Gender and HIV in sub-Saharan Africa

One of the most striking features of the AIDS epidemic is what is referred to as its “feminization”. Whereas in 1985, thirty-five percent of infected people were women,

¹ According to Merson et al, for every two patients who started antiretroviral therapy in 2007, five new HIV infections occurred (Merson et al. 2008: 485).

² In 2007, approximately 40% of the US\$10 billion spent on HIV/AIDS in low-and middle-income countries went to prevention; in the same year, UNAIDS estimated that HIV prevention would cost US\$11.6 billion by 2010 (UNAIDS 2007a).

the figure has now risen to approximately fifty percent (Quinn and Overbaugh 2005). In the most severely affected countries in sub-Saharan Africa³, prevalence is on average three times higher in young women than in young men aged 15-24 years (Gouws et al. 2008). In sub-Saharan Africa as a whole, women account for approximately 60% of all HIV infections (Garcia-Calleja et al. 2006; UNAIDS 2008c). Women's higher vulnerability to HIV infection has been well-documented, and is attributed to both biomedical and socio-economic determinants. In terms of the former, efficiency of transmission is generally believed to be greater in women than in men (European Study Group on Heterosexual Transmission of HIV 1992; Nicolosi et al. 1994; O'Brien et al. 1994), and this may be partly due to the larger surface area of the female genital tract and higher viral load in semen than vaginal fluids (Chersich and Rees 2008). However, as Chersich and Rees note, "the biomedical vulnerability that most interventions seek to target is an outward manifestation of an underlying gendered social and economic vulnerability, which takes expression in behavioural risks" (Chersich and Rees 2008: S35). Social and economic factors that have been reported to increase women's vulnerability to HIV include inequitable access to education and labour markets (Hallman 2004; Jukesa et al. 2008; Ehrhardt et al. 2009); lack of power within relationships (Blanc 2001; Dunkle et al. 2004; Pettifor et al. 2004); and gender-based violence (GBV) (Andersson et al. 2008). It is widely acknowledged that the pathways through which such determinants operate are complex and multi-faceted.

Heterosexual sexual intercourse is the primary mode of transmission in sub-Saharan Africa and, ironically, "models suggest that the proportion of new infections among people in stable, so-called 'low-risk' partnerships is often high" (UNAIDS 2009: 29). In spite of the dyadic context of HIV infection between sexual partners, HIV prevention programmes and evaluation have focused almost exclusively on individuals rather than couples (Painter 2001). Furthermore, the needs and vulnerabilities of heterosexual men have been relatively ignored in the development of HIV prevention models; where men are included, this is often in an instrumentalist way, relating solely to their impact on women (Peacock et al. 2009). In a new recognition of the importance of partnerships, UNAIDS declared in 2008 that, "By specifically tailoring programmes to reach people

³ Gouws et al analysed data from countries where national adult HIV prevalence was more than 10%. In 2007, these were Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe (Gouws et al. 2008).

in different kinds of partnerships, HIV prevention efforts may achieve greater impact than programmes that solely aim to affect the behaviours of a single individual” (UNAIDS 2008c: 117). This follows findings from observational studies suggesting that Voluntary Counselling and Testing (VCT) with serodiscordant couples is effective as an HIV prevention tool (Kamenga et al. 1991; Allen et al. 1992; Padian et al. 1993; Skurnick et al. 1998; Roth et al. 2001; Allen et al. 2003) and that in terms of prevention of mother-to-child transmission (PMTCT), male involvement is associated with women’s acceptance of counselling, receipt of HIV test results, uptake of antiretroviral medication, and modification of infant feeding practices (Farquhar et al. 2001; Kiarie et al. 2003; Farquhar et al. 2004; Msuya et al. 2006; Homsy et al. 2007; Kakimoto et al. 2007; Traore et al. 2009). It is clear that gender relations play an important role in both perpetuating and mitigating the virus, and that simplistic assumptions about gender and HIV prevention need to be problematised.

Advent of the ‘NPTs’: New Prevention Technologies

In the 2000s, as polarized debate and fatigue set in with ABC (‘Abstain, Be faithful, Condomise’) behaviour change programmes (Collins et al. 2008), a wave of research on new prevention technologies buoyed hope of curbing the epidemic. Amongst the proposed technological fixes were diaphragms, microbicides, vaccines, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), male circumcision, and Herpes Simplex Virus 2 (HSV-2) suppressive therapy. These biomedical innovations were loosely grouped together under the term ‘New Prevention Technologies’ - or ‘NPTs’. According to Imrie et al, “the euphoria about biomedical interventions to prevent HIV...ignited the 2006 International AIDS Conference” (Imrie et al. 2007: 10). Since this early excitement, however, the prevention field has had to deal with the complexities of clinical trials to test the NPTs; finding populations with adequate HIV incidence, choice of control group, accurately measuring adherence and sexual behaviour (Tolley et al. 2009), and identifying surrogate markers for HIV infection (Gurunathan et al. 2009) are just some of the key issues that have preoccupied prevention scientists (Lagakos and Gable 2008). Apart from male circumcision

(Auvert et al. 2005; Bailey et al. 2007; Gray et al. 2007), none of these 'magic bullets' has yet been shown to reduce the risk of HIV infection.

Background to the case study

This research is a case study of one clinical trial of one candidate microbicide. The microbicide in question is PRO 2000, which was tested through the Microbicides Development Programme. As mentioned above, I worked on the trial for five years, coordinating the socio-behavioural component of the research. My PhD aimed to step back from this work and examine the co-production of gender and technology in the scientific process. Specifically, I was interested in the circuit of knowledge-power relations in which gender identities are produced, how ideas and technologies travel, and how scientific knowledge and its products bridge different geographic and social locations. The literature review in chapter two lays out in detail the conceptual framing of my research questions; below, I set the empirical scene.

Microbicides

Microbicides are a class of substances under development that could reduce the sexual transmission of HIV and other sexually transmitted diseases, when applied locally to genital mucosal surfaces. Various mechanisms of action are being investigated, as well as different product formulations, including gels, films, creams, rings and suppositories (for an overview, see Cutler and Justman 2008). At the end of 2009, four compounds were in phase I/II clinical trials⁴ (Dapivarine, VivaGel, Acidform, UC-781) and one was in phase IIB (Tenofovir) (Alliance for Microbicide Development 2009). To date, five

⁴ There are several phases of clinical trials. Phase I trials test the safety of the product in small numbers of healthy volunteers, identify side effects and determine a safe dosage range. Phase II trials test the safety and efficacy of the drug in larger numbers of volunteers over a longer time period. Phase III trials take place in large groups of people to confirm the drug's effectiveness, monitor side effects, and compare it to the best available alternative. Phase IV studies may be conducted after the drug or treatment has been marketed to collect additional information on the drug's effect in different populations and any side effects associated with long-term use (for further information, see <http://www.nlm.nih.gov/services/ctphases.html>).

products have entered phase III clinical trials, but no product has been found to be safe and effective.

PRO 2000 was one of four 'second generation' microbicides that entered the final stages of clinical testing, the others being Carraguard, Cellulose Sulafate and BufferGel⁵. These polyanionic compounds are commonly referred to as 'entry inhibitors' and work by blocking HIV binding (McClure et al. 1992). This is very much an evolving field; during the course of this PhD research, the last of the second generation microbicides completed phase III clinical testing, and six 'third generation' products entered clinical trials (Alliance for Microbicide Development 2009)⁶. 'Third generation' microbicides, which contain antiretroviral compounds, are said to present a more 'tailored' approach to HIV prevention and are likely to be more effective than previous generations (Cutler and Justman 2008; Garg et al. 2009).

The Microbicides Development Programme (MDP)

The Microbicides Development Programme is a large, not-for-profit, African-European partnership, which was established in 2000 to develop vaginal microbicides to reduce the risk of HIV infection in women. It aims to do this through the evaluation of potential microbicides in vitro; clinical safety studies in the UK and Africa; clinical efficacy trials; social science research on acceptability and barriers to adherence; and facilitation of marketing and access to a successful product. The partnership is coordinated in the UK by Imperial College London and the Clinical Trials Unit of the Medical Research Council (MRC) (<http://www.mdp.mrc.ac.uk/>). It is funded by the UK government through the Department for International Development (DFID) and the Medical Research Council; following an initial grant of £16 million, it subsequently received £24 million in 2005 to conduct the largest phase III trial of a microbicide candidate to date (see below) (Department for International Development 2010). MDP consists of 16 collaborating partners in Africa and Europe, including institutions in the UK, Spain, South Africa, Zambia, Tanzania, Uganda and Mozambique.

⁵ First generation microbicides included the surfactants Nonoxynol-9 (N9) and Savvy.

⁶ Third generation microbicides include Tenofovir, a nucleotide analogue reverse transcriptase inhibitor antiretroviral drug, UC781 and TMC120 non-nucleoside reverse transcriptase inhibitors (NNRTI).

The MDP301 trial

MDP301 was an international, multi-centre, randomised, double-blind, placebo-controlled trial to evaluate the efficacy and safety of the candidate microbicide PRO 2000 for the prevention of vaginally acquired HIV infection. The trial started in October 2005 and recruited a total of 9,404 women. It was conducted at six sites in Africa: three in South Africa, and one each in Zambia, Uganda and Tanzania. In South Africa and Zambia, women were recruited from the general community; in Tanzania, a sample of women working in bars, hotels, guesthouses and other food or recreational facilities was recruited; and in Uganda, women in HIV sero-discordant relationships were recruited through sero-survey. At each site a community mobilisation team led recruitment strategies, variously involving public meetings, newsletters, posters, community roadshows, sponsored sports and social events, peer-led education, door-to-door campaigns and presentations in clinic waiting rooms. To participate, women had to be 16 years or over in the Tanzanian and Ugandan sites, or 18 and over in the others, sexually active, HIV negative and not pregnant (Nunn et al. 2009).

Trial participants received pre-filled vaginal applicators containing either a placebo gel or PRO 2000 gel and were asked to insert one dose intravaginally within one hour before each vaginal sex act during the follow up period. Every four weeks, they were given an appointment to come to the clinic to collect further gel supplies and to return their used and unused applicators. These were counted to ensure all gel was accounted for and to allow gel exposure estimates. At every other follow up visit, they had to provide urine for a pregnancy test; if pregnant, they were required to discontinue gel use. At weeks 0, 4, 12, 24, 40 and 52 they underwent additional procedures, including a clinical evaluation, genital examination, and specimen collection for STI and HIV testing. All participants received HIV testing and counselling, promotion of safer sex practices, free condoms, and diagnosis and treatment of sexually transmitted infections (Nunn et al. 2009).

Each woman was followed up for 12 months, or up to 24 months in Uganda. The primary outcome measures were acquisition of HIV infection at or before 9 months (efficacy), and grade 3 or 4 clinical events (safety). Secondary outcome measures

included HIV infection at or before 6 and 12 months, acquisition of HSV-2 in women uninfected at enrolment, and point prevalence of *Neisseria gonorrhoeae* or *Chlamydia trachomatis* after 24 weeks of follow up.

In addition to undergoing clinical procedures, a sub-sample of women (approximately 100 at each site) were randomized to take part in a parallel social science component. The aims of this integrated work were to assess the reliability and validity of sexual behaviour data collected in the clinic; understand acceptability of the trial procedures and reasons for withdrawal; understand acceptability of the study product, including barriers to gel adherence; and assess the informed consent procedure. Women who participated in the social science study were followed up at three time points during the trial and asked both to complete a coital diary and take part in an in-depth interview. A smaller number of male partners were also asked to take part in an in-depth interview. In addition, the views of both men and women were sought at a community level through ongoing focus group discussions.

Follow-up was completed in August 2009 and the results of the trial were made public on 14th December 2009. The press release stated that, “the risk of HIV infection in women who were supplied with PRO 2000 gel was not significantly different than in women supplied with placebo gel. Although ineffective in providing protection, PRO 2000 gel itself was safe to use” (Microbicides Development Programme 2009).

Study settings: United Kingdom and Zambia

This research was conducted in two MDP ‘sites’: the coordinating site in the UK and one of the six clinical trial sites in Africa, in Zambia. Studies in public health research typically describe the study setting, and this is presumed to be the location where the intervention takes place, often an exotic-sounding ‘Other’. However, if research itself (including its socio-political antecedents) is taken as a constituent part of any intervention, then the description of the study setting should rightfully include all of the sites where research is practised. In this case, that includes the UK. A few brief details

serve to highlight the disparities – not merely geographical, but social, economic and health-related – that provide a backdrop to the current research.

The United Kingdom is an island country located off the north-western coast of continental Europe, with an estimated population of 61.4 million in 2008 (Office for National Statistics 2009). It is the world's sixth largest economy, based predominantly on the service sector, which is dominated by financial services. Per capita income in 2008 was estimated at \$36,130⁷ and life expectancy at birth was 79.3 years (World Bank 2010). The UK is ranked 17/155 in the 2009 Gender-related Development Index (GDI) (United Nations Development Programme (UNDP) 2009). The GDI is a measure of human development originally formulated by the UNDP that accounts for inequality between men and women (see Charmes and Wieringa 2003; Shiva Kumar and Fukuda Parr 2009). In 2007, adult HIV prevalence was estimated to be 0.2% and there were an estimated 500 deaths due to AIDS (UNAIDS 2008a).

Zambia, by contrast, is a landlocked country in Southern Africa and in 2000 had an estimated population of 9.9 million (Central Statistical Office Zambia 2003). Per capita income in 2008 was estimated at \$1,230 (World Bank 2010) and the 2006 Living Conditions Monitoring Survey estimated the incidence of poverty at 64% (Central Statistical Office (CSO) Zambia 2006). Life expectancy at birth is 45.9 years (World Bank 2010). The economy is based largely on copper and cobalt mining, whilst the majority of people (72% in 2000) are employed in agriculture (Central Statistical Office Zambia 2003). In terms of the status of women, the 2009 Human Development Report ranked Zambia 136/155 in the Gender-related Development Index (United Nations Development Programme (UNDP) 2009). The 2007 Zambia Demographic and Health Survey reports that although women have some decision-making power within the home, they are relatively disempowered in relation to men, being less likely to receive secondary education, less likely to be employed or earn their own money, and more likely to be the victims of violence (Central Statistical Office (CSO) [Zambia] and Macro International Inc. 2009). In 2007, adult HIV prevalence was estimated at 15.2% and there were an estimated 56,000 deaths due to AIDS (UNAIDS 2008b).

⁷ GNI per capita based on purchasing power parity (PPP).

Summary of the thesis

In this thesis I explore the co-production of gender and technology through a case study of the Microbicides Development Programme. In the seven chapters that follow, I review approaches to the study of science, technology and gender in HIV prevention research; detail my methodology; present empirical findings from fieldwork in the UK and Zambia; and reflect on the relevance of my research for future HIV prevention efforts.

Chapter two presents a review of the empirical and theoretical literature which has framed the current study. Starting with the topic of new pharmaceutical prevention technologies, I explore pertinent bodies of work from the sociology of pharmaceuticals and the anthropology of biosciences. I go on to consider approaches from the Science and Technology Studies (STS) literature, counterpoising debates between feminist technoscience and radical constructivism. I discuss the relevance of Foucauldian theory on power, discourse and the subject to studying clinical trials, and end the chapter by defining my research agenda.

In chapter three, I lay out the methodological issues negotiated in the study, situating these within the salient debates at the intersections of public health research and STS. This chapter explicitly frames methodological choices in terms of a tension between social science and social contingency, acknowledging that ‘mess’ in the social world does not stop at the door of research (Law 2004). In addition to discussing theoretical underpinnings and assumptions, I also present and justify my methods, detailing sites and informants, sampling, interviewing and ethical considerations.

The four empirical chapters that follow present a sociological analysis of the Microbicides Development Programme and the MDP 301 trial. The analysis follows a temporal and spatial evolution, from the historical development of the microbicides research agenda in the UK in the late 1990s to the contemporary testing and use of the candidate product, PRO 2000, in Zambia between 2006 and 2009.

Chapter four, therefore, places PRO 2000 in historical context. Using the idiom of co-production, I analyse the social, scientific and political discourses that led to the stabilisation of the product as a tool for women's empowerment in the West, and the simultaneous production of gendered identities in the HIV prevention field. This chapter is based on interviews conducted with senior research scientists in the UK and the US who were pivotal in the product's development and testing.

Chapter five moves on from the processes of technological production to focus on how PRO 2000 was brought into a phase III clinical trial in Africa. Using interviews with UK and Zambian researchers, I explore how the Microbicides Development Programme established itself as a cohesive scientific enterprise across diverse geographic and institutional settings. The discursive production of participatory democracy, partnership, and gendered capacity building, I argue, was fundamental to establishing an effective collaboration, and played an important role in the production of both scientific and gendered identities. I chart the mobilisation of these discourses through the creation of the MDP network and phase III protocol.

In chapter six, the focus shifts from the site of central coordination in the UK to the establishment of the MDP clinical trial site in Zambia. This chapter uses interview data with Zambian researchers, and focus group data with community members, to explore the creation of a new trial site as a site of knowledge production. Specifically, I look at the discursive metamorphosis and ongoing construction of microbicides in the context of their actual use in an African setting. I discuss how the research produced particular kinds of subjects as an effect of discursive and power relations, and the appropriation of and resistance to techniques of power by the community, men and women.

In chapter seven, I explore how ideas and technologies travel, how scientific knowledge and its products bridge different geographic and social locations, and how scientific and social intelligibility are produced in a Zambian trial community. Interview and focus group data from the MDP trial site in Zambia form the basis for this discussion, with the focus on trial participants and their male partners. The analysis starts with a description of how gender is produced through existing institutions in the trial community. I then go on to discuss a crisis in masculinity, particularly in relation to HIV, and the role the

research played in re-producing negative male representations. I explore women's participation in the trial as a 'technology of the self' and their enrolment of the trial into their own strategies to negotiate power with their partners.

The final chapter of this thesis, chapter eight, returns to the questions that emerged from the literature review and considers the empirical and theoretical contributions this research makes to the fields of public health and STS. I discuss the role of research in constructing gendered identities, and the importance of this to HIV prevention. On a more theoretical level, I demonstrate how Foucauldian concepts of governmentality, disciplinary power and technologies of the self have been used to understand the processes of clinical trials research into microbicides. The thesis concludes by posing a challenge for future work on health technology development, suggesting greater collaboration between different epistemic communities.

Chapter Two

Science, Technology and Gender in HIV Prevention Research: Empirico-Theoretical Approaches

Introduction

...the contributions of early theoretically rich cultural and social research on HIV have been largely eclipsed by the yearning for evidence; the value of deep social science inquiry of HIV is no longer well recognized or well understood. (Mykhalovskiy and Rosengarten 2009: 190)

In 2009, Mykhalovskiy and Rosengarten drew attention to the waning of theoretically-engaged critical social research on HIV and AIDS. In contrast to the innovative scholarship that marked the early years of the epidemic (for example Treichler 1988; Patton 1990; Martin 1994; Patton 1994; Epstein 1996), there has been a dearth of interest in theory and socio-cultural critique, due in part, they argue, to the ascending hegemony of evidence-based medicine. The latter has privileged positivist social science and applied knowledge outputs as part of the project of governing healthcare: “This is an organization of research in which health, illness and disease are constituted as governmental problems to be ameliorated by research considered to generate evidence-based solutions and formulated within the established terms of health policy, managerial and professional discourses” (Mykhalovskiy and Rosengarten 2009: 189). The effect has been to foreclose thought and stifle critical inquiry into the current field of HIV and biomedical attempts to control it. As they note, dishearteningly, “increasing biomedicalization does not necessarily mean that the epidemic itself has subsided or...become more manageable” (Mykhalovskiy and Rosengarten 2009: 193).

The 2000s have been marked by developments in biomedical technologies to prevent HIV, such as vaccines, pre-and post-exposure prophylaxis (PrEP and PEP), microbicides, cervical barriers, HSV-2 suppressive therapy and male circumcision. All of these technologies currently follow a trajectory from Northern lab benches to

Southern population testing, with scientific and media attention focused on the outcome of large-scale efficacy trials. Almost no attention is paid to the processes through which new technologies for HIV prevention emerge into the testing arena and how scientific knowledge is subsequently generated within so-called 'trial communities'. Various disciplines contribute to the possibility of framing research questions around new prevention technologies; anthropology, sociology, science and technology studies (STS), and cultural studies have all broached aspects of this topic, tackling ontological and epistemological questions about human subjects, diseases and their remedies, and science. Below I explore empirical and theoretical pathways into the topic of new pharmaceutical prevention technologies, seeking to elucidate how these might contribute to the critical social study of microbicides as a case study.

Clinical trials and medical research as the subject of research

Medical technologies, including both drugs and devices, have been studied extensively in anthropology, sociology and science-studies. Of particular relevance are the rich bodies of literature that have evolved in the sociology of pharmaceuticals and the anthropology of biosciences. Williams et al recently provided a concise review of progress and prospects in the sociology of pharmaceuticals, listing the major themes in the field as biomedicalisation, regulation, consumption and expectations/innovation (Williams et al. 2008). Several of these concerns overlap with work being undertaken in the anthropology of bioscience, in particular a focus on bioethics and the political economy of clinical trials. Studies of the evidence-making process and its biases have proliferated over the past decade at these disciplinary intersections (Moynihan and Cassels 2005; Petryna et al. 2006; Abraham 2008). Ethical concerns surrounding medical research in resource-poor settings, including the 'pharming' out of clinical trials⁸, and how these relate to the economic, historical and political dimensions of the global scientific field are a recurrent theme (Geissler 2004; Petryna 2005; Fairhead et al. 2006; Geissler and Pool 2006).

⁸ 'Pharming out' is a play on words used by some researchers to insinuate that pharmaceutical companies irresponsibly shift the dirty work of experimentation onto poorer and more vulnerable populations in developing countries.

Although ethics is obviously an important aspect of clinical research (and one which has been studied extensively), more relevant for my own work are studies which focus on trials more holistically; for example, adopting a political economy approach, Petryna and Fisher interrogate the global and local politics of industry-led pharmaceutical trials, both in the US and 'off-shore' clinical sites (Fisher 2009; Petryna 2009). Both of these insightful ethnographic texts shed light on the organizational culture of commercial clinical trials and situate detailed local accounts within broader debates about neoliberal governance and the concept of experimentality. Inherent to both is a critique of neoliberalisation and the enrolment of vulnerable populations into potentially exploitative regimes of commercial experimentation.

Both Petryna and Fisher focus on industry-led pharmaceutical research and do not explore the distinct field of academic-led clinical trials. The latter represents an under-researched area within science studies, although one which is now being investigated by various European groups⁹. Again, the primary debates emerging from these studies concern bioethics and the political economy of trans-national biomedical research, with developing countries and their citizens implicitly positioned as the victims of globalization¹⁰. Whilst it is clearly important to study the political and ethical dimensions of trans-national research, and to highlight the disparities in wealth and power that collaborative overseas research may engender, we should not neglect the social study of science itself in these configurations.

Indeed, rather than taking trials as the locus of 'science in action', researchers have predominantly analysed them in terms of broader debates about ethics, governance, medicalisation and consumerism. Until recently, there has been a persistent neglect of the social and scientific co-production that occurs through product development and use in human experimentation. Rosengarten and colleagues have now begun to address this gap, interrogating the clinical testing of pre-exposure prophylaxis (PrEP) for HIV prevention (Rosengarten and Michael 2009a; Rosengarten and Michael 2009b).

⁹ For example, the Martin Okonji Research Group on the Anthropologies of African Bioscience at the London School of Hygiene & Tropical Medicine, and LOST (Law, Organisation, Science and Technology) at the Max Planck Institute.

¹⁰ See, for example, the syllabus of the Oslo Summer School in Comparative Social Science Studies 2008, on "The Ethics and Political Economy of Medical Research – Anthropological Perspectives": <http://www.sv.uio.no/oss/Museum/2008/geissler.html> accessed 17/10/09.

Drawing on Mol's concept of ontological multiplicity (Mol 2003), Rosengarten and Michael problematise the notion of PrEP as a stable and singular pharmaceutical product. By analysing scientific discourse around the development and expectations of PrEP, they draw attention to the technology's simultaneous nature as performative and processual, in spite of its manifestation as a non-relational entity (Rosengarten and Michael 2009a). The question this raises is the extent to which clinical testing designed around the notion of a singular and stable object can account for, and therefore prepare the way for, the multiple contingencies of a technology which is in fact complex, heterogeneous and in flux. They call for "the multiplicity of PrEPs" to be recognised and expectations of this new prevention technology adjusted accordingly (Rosengarten and Michael 2009a: 1054).

Multiplicity is again fore-grounded in their discussion of the bioethics of using antiretroviral therapy as a technology for prevention. In this instance, trials themselves are taken as technologies that are heterogeneous, processual and multiple, not simply the drugs that they are designed to test. Rosengarten and Michael discuss RCTs as performative and ontologically divergent fields that both shape and are shaped by the contexts in which they are enacted (Rosengarten and Michael 2009b). In this analysis, bioethics becomes a performative element of trial design and implementation (as opposed to an external comment on them), reducing the field to an abstracted relationship between researcher and researched. In this conceptualisation, the complex dynamics engendered by material and cultural differences between actors and actants in PrEP trials are obscured and progress towards an expanded notion of inclusive and ethical trial participation forestalled.

A hallmark of sociological and anthropological research on clinical trials has been their critical stance vis-à-vis the pharmaceutical industry and sponsors of academic trials. Whilst this stance has been productive in highlighting the inequalities in global access to biomedical treatment and prevention, and the ethical dubiousness of some experimental undertakings, we should not be seduced by the easy (yet often futile) accomplishment of demonising those we study. Much of the work cited above is heavily laden with the rhetoric of victims and exploiters, in such a way that the issue of subject-formation through the research process is painted over and disappears. For

example, in proposing that “the trial be viewed as composed of multiple relations with heterogeneous entities...through which medically drugged bodies emerge” (Rosengarten and Michael 2009b: 191), Rosengarten and Michael conjure up an image of torpid zombies, devoid of agency and lacking mental faculties. In attending to the macro-level processes of clinical trials as they emerge trans-globally, scholars have mobilised a normative concept of power, in which ‘the West’ or ‘the Scientists’ exploit ‘the Other’. This approach obscures the micro-level techniques of power that *all* actors negotiate in interaction with each other and through which they, and the technologies they test, are co-constituted.

Beyond medicalisation¹¹: ‘Living drugs’ and ‘the pharmaceutical imagination’

Underscoring the need to move beyond the critique of drug companies as ruthless exploiters of a duped public, Nikolas Rose argues that “medicalisation has become a cliché of critical social analysis” (Rose 2007: 700). Taking up his call to see medicalisation as “the starting point of an analysis” rather than “the conclusion of an analysis” (Rose 2007: 702), a number of authors have adjusted the analytical frame to consider the mutual constitution of drugs, bodies, subjectivities and cultures (Biehl and Moran-Thomas 2009; Fraser et al. 2009; Marshall 2009). Encapsulating the continuities between the social, medical, moral, ethical, political and pharmaceutical domains, Fraser et al refer to ‘living drugs’:

We ‘live’ drugs in the process of making ordinary lives, social relationships and political institutions...drugs are social and political agents. In a strange way, they too have lives – as much as we live through drugs, they live through us. The notion of ‘living drugs’ means taking drugs seriously as analytic objects. (Fraser et al. 2009: 124)

¹¹ There has been a shift among some sociologists from using the term ‘medicalisation’ to using the term ‘biomedicalisation’. According to Clarke et al, “Biomedicalization describes the increasingly complex, multisited, multidirectional processes of medicalisation, both extended and reconstituted through the new social forms of highly technoscientific biomedicine” (Clarke et al. 2003: 161). For more on this transition see (Conrad 2005; Conrad 2007).

Marshall exemplifies an analysis of living drugs using the example of sexual dysfunction, demonstrating “the ongoing co-construction of diseases, the bodies through which they are enacted, and the drugs used to treat them” (Marshall 2009: 138). Although there is a growing literature on so-called sexuopharmaceuticals (pharmaceutical products for sexual dysfunction), what makes Marshall’s work notable is her invocation of the ‘pharmaceutical imagination’ as a player in the scientific and cultural narratives of sexuality and sexual problems:

...the pharmaceutical imagination assumes that the biological body is a realm unto itself, neatly separable from its cultural materialisation or subjective experience. It circumscribes what is to be considered problematic, valorises particular kinds of solutions and accords significance to some agents over others in constructing explanatory narratives for the success or failure of those solutions. But more so than a ‘style of thought’, the pharmaceutical imagination embodies a future-orientation: there is an optimism linking patients, practitioners, researchers and industry that, whatever the problem, a better chemical solution is on the horizon. (Marshall 2009: 135)

In contrast to the self-righteous markets-and-profits critique of pharmaceuticals, the concept of the pharmaceutical imagination permits an analysis of how knowledge is produced in the context of drug-making and –taking. It suggests an analytical space in which biotechnology can be seen to materialize not only the social, political and economic body, but simultaneously the bodies of individuals.

From drugs and trials to artefacts and networks

Pharmaceuticals are but one aspect of the much broader intersecting fields of science and medicine. Whereas the recent critique of pharmaceutical trials focuses to a large degree on bodies and bioethics, it is nonetheless part of a longer history of the critique of science and its paradigms going back to the 1960s. Kuhn’s *The Structure of Scientific Revolutions* was a watershed for the sociology of science, opening up not just the context surrounding scientific discovery, but the very discipline of science itself, to

critical enquiry (Kuhn 1962). Since then, studies of the nature of scientific knowledge have abounded; by demonstrating the socially situated nature of scientific vision and interpretation, critics have highlighted the constructed nature of scientific facts and thus called into question science's status as gatekeeper to an incontrovertible truth. Philosophers of science have focused on science as a social and political process, whose claims to knowledge are inseparable from the way in which that knowledge is produced.

Work in the relatively young field of science and technology studies has also sought to expose the social nature of scientists' claims to truth and objectivity by "trying to detect the real prejudices behind the appearance of objective statements" (Latour 2004). Science and Technology Studies (STS) has much to offer the analysis of microbicides as a technology. STS focuses on "the nexus of science, technology, culture and power" (Jasanoff 2006: 1), exploring the production of knowledge and artefacts in society through a critical deconstruction of discursive and material sources. The field is characterised by a heterogeneity of approaches and methods taken from across the social sciences and humanities, including anthropology, sociology, philosophy, politics, history, media and cultural studies. Perhaps because of this confluence of disciplinary interests, and the relative youth of the field, STS is typified by highbrow intellectual jousting and constant debate on key terms and approaches (see for example Pickering 1992; de Vries 1995). Whilst these debates are stimulating in and of themselves, I do not wish to focus on them here; rather my aim is to elucidate some of the key concepts that may be useful to the current thesis within a public health context.

The social construction of technology (SCOT), championed by Pinch and Bijker in the mid-1980s (Pinch and Bijker 1984) has been highly influential in studies of technology. Building on the Empirical Programme of Relativism (EPOR), which evolved as a method to demonstrate the social construction of scientific knowledge within the sociology of scientific knowledge (SSK), SCOT formalises a series of theoretical and methodological steps for analysing the development process of technological artefacts (see also Bijker et al. 1987). The first stage of both EPOR and SCOT involves demonstrating the interpretative flexibility of scientific findings and the design of artefacts respectively. Interpretative flexibility refers to the idea that multiple competing interpretations of the natural world are available and there are many ways in

which artefacts can be designed. In other words, the sociologist must show that there is nothing natural or inherent about scientific knowledge or artefacts (and therefore that “it could have been otherwise”). In subsequent stages of EPOR and SCOT, the aim is to demonstrate how debates about scientific knowledge are closed and consensus established, and how artefacts come to be stabilized, typically amongst different social groups. A third stage of SCOT involves relating technologies to the wider socio-political context, a step that is not expanded on in Pinch and Bijker’s original paper.

EPOR and SCOT are both located within the strong programme of science studies as advocated by Bloor (Bloor 1991 [1976]). The main tenet of the strong programme is that sociologists should be impartial to the success or failure of scientific theories and artefacts, analysing ‘truths’ in the same way as discounted beliefs and ‘falsehoods’. This has been referred to as the principle of symmetry. The original call for symmetry was a response to ‘weak’ sociological explanations of science that only explained scientific failure, and left unquestioned the ‘facts’ and ‘truths’. EPOR and SCOT were conceived as a response to such scientific and technological determinism. More recently, however, these approaches themselves have been criticised for sociological reductionism, that is, explaining nature by reference to society and social ‘facts’ (Jasanoff 2006)¹². ‘Social Constructionism’ arguably infers causal primacy on the social, ontologically privileging social over natural reality (Hacking 1999), and as Jasanoff notes, “the discourse of social construction tends to inhibit the symmetrical probing of the constitutive elements of both society and science” (Jasanoff 2006: 19).

Extending the notion of symmetry, proponents of Actor-Network Theory (ANT) additionally argue that knowledge takes a material as well as a social form, which should be taken into account in analyses of scientific process (Callon 1986a; Callon 1986b; Law 1992; Latour 2005). Under the principle of generalised symmetry, the material-semiotic approach controversially attributes agency to both human and nonhuman actors (‘actants’), and maps the relations between human interest/cognition/emotion and the material objects (such as machines and texts) with which they interact. ANT has provided some useful analytic concepts for dissecting

¹² SCOT has also been criticised on various other grounds, including its lack of attention to how technologies “transform personal experience and social relations” and its inclination to “sidestep questions that require moral and political argument” (Winner 1993: 369 & 373). See also (Russell 1986).

and explaining the work of science in action, such as the core notion of translation, used “to refer to the processes by which entities mutually enrol each other into a combination of some type, claiming to speak for each other, interpreting, configuring and reconfiguring each other” (Prout 1996: 202). It also champions tenets which are relevant beyond the study of networks; for example agnosticism – analytic impartiality as to the actors implicated in a controversy – and free association – the rejection of a priori dichotomies (for example between the natural and the technological). It is ANT’s non-dualistic approach that has been seen both as one of its greatest strengths and weaknesses.

In spite of its methodological contributions to the study of technoscience, ANT has sustained a number of valid criticisms (predominantly, but not exclusively, around generalised symmetry¹³), which I believe limit its utility for my own work. One such criticism is that it is ‘prosaic’ and empirically reactionary (Collins and Yearley 1992: 323); in focusing so doggedly on the minutiae of the network as the object of analysis, ANT fails to attend to the values, morals, politics, ideologies etc. which accompany the genesis and sustaining of systems of governance (Jasanoff 2006: 23). One of ANT’s chief proponents, Law, has stated that:

Sociology is usually interested in the *whys* of the social. It grounds its explanations in somewhat stable agents or frameworks. Actor-network’s material semiotics explore the *hows*. In this non-foundational world nothing is sacred and nothing is necessarily fixed. But this in turn represents a challenge: what might replace the foundations that have been so cheerfully undone? Is it possible to say anything about network-stabilising regularities, or are we simply left with describing cases, case-by-case? (Law 2007)

As if pre-empting this, and addressing the aforementioned debate, Jasanoff remarks, “the answer is not to substitute for the once unanalyzable category called “science” a

¹³ In a well-known and scathing attack on ANT, Collins and Yearley respond to Callon’s seminal 1986 paper on the scallops of St. Brieuc: “...the creation of symmetry is very much in the hands of the analysts. The analysts remain in control the whole time, which makes their imposition of symmetry on the world seem something of a conceit. Would not complete symmetry require an account from the point of view of the scallops?” (Collins and Yearley 1992: 313).

term like “network”, whose internal structure and function also resist sociological or normative analysis” (Jasanoff 2006: 44).

Since microbicides are an overtly ‘gendered’ technology, it’s worth noting that a number of feminist commentators have also criticised ANT and found it unsuitable in feminist analyses of science and technology, citing excessive relativism, ahistoricism and gender-blindness (Ormrod 1995). For example, Cockburn accuses ANT of being gender-blind, since those involved in the design and development stages of an artefact’s life are predominantly male. Furthermore, “there is a lack of concern with subjectivity, which leads to a neglect of the way technology...enters into our *gender identity*” (Cockburn 1992: 39, emphasis in original). Cockburn goes on to criticise the lack of attention to historical dimensions of power, which, she argues, dissolves the possibility of demonstrating technology’s role in perpetuating patriarchy. Wajcman similarly observes that ANT ignores gender and has focused on sites of female absence (Wajcman 1991: 23-24). The latter criticism is inherent in Star’s observation that ANT fails to consider the invisible work conducted by marginal or multiply-located members of networks such as “secretaries, wives, laboratory technicians and all sorts of associates” (Star 1991: 29). Drawing on feminist theory and symbolic interactionism to discuss the dimensions of power within (and with-out) networks, she proposes a theory of multiple membership and heterogeneity that attends to the non-enrolled¹⁴.

Not all feminist writers have rejected ANT; for example Singleton has used the approach productively to analyse the public/science relationship within the British Cervical Screening Programme (Singleton 1995; Singleton 1996). Singleton’s accounts are interesting, not only for their findings but for the interwoven debate on the tensions between feminism and ANT. Whilst proclaiming that she “became enamoured of the approach, in particular its non-dualistic nature and its concomitant emphasis on the contingent nature of scientific knowledge-claims” (Singleton 1995: 147), she nonetheless signals the risks to feminism:

¹⁴ Star has not been alone in critiquing ANT’s traditional lack of attention to multiplicity, ambivalence and instability in what can be one-dimensional accounts of actor-networkers. For more on this, and on the ‘ecological approach’, see (Star and Griesemer 1989; Fujimara 1992).

ANT may offer a way for feminists to think about the woman/science relationship outside patriarchally determined dichotomies, but this way of thinking may be, at best, degendered and politically impotent and, at worst, politically potent through (its claim to) being degendered (Singleton 1995: 154-155).

The benefits that Singleton raises of using ANT within a feminist context are not limited to ANT as an approach; for example, Foucauldian analyses also provide a way of thinking about the self in relation to science outside of patriarchal dualisms. So whilst the feminist critique of ANT may be somewhat short-sighted, ANT itself remains limited in the ways described above.

If SCOT is asymmetrical, and ANT overly concerned to describe rather than explain, what other approaches are available for studies at the intersection of science, technology and gender? Which approaches lend themselves to the study of knowledge as well as practice, are concerned with the links between the macro and the micro, attend to social theory as well as empirical detail, and are concerned to elucidate the historical, political and cultural workings of power? Jasanoff has convincingly proposed the idiom of co-production to counter leanings towards either technoscientific or social determinism and to bridge the gap between constitutive and interactional strands within STS¹⁵:

Briefly stated, co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it. Knowledge and its material embodiments are at once products of social work and constitutive of forms of social life; society cannot function without knowledge any more than knowledge can exist without appropriate social supports. Scientific knowledge, in particular, is not a transcendent mirror of reality. It both embeds and is embedded in social practices, identities, norms, conventions, discourses, instruments and institutions – in short, in all the building blocks of what we term

¹⁵ The constitutive strand focuses broadly “on the constitution of new technoscientific cultures, often around emergent ideas and concepts”; the interactionist strand “on solving problems of disorder within established cultures”. These two strands capture STS’s engagement with the metaphysical and the epistemological respectively (Jasanoff 2006: 6).

the *social*. The same can be said even more forcefully of technology (Jasanoff 2006: 2-3).

Co-production does not represent a unified theory, nor does it insist on a resolution of the controversies that have dominated STS. Rather, it presents an interpretative framework for analysing “the relationships between the ordering of *nature* through knowledge and technology and the ordering of *society* through power and culture” (Jasanoff 2006: 14). Within this framework, the interaction between the material, the cognitive, the social and the normative is probed to elucidate the making of identities, institutions, discourses and representations.

Feminism and technology

Since the call for microbicides has been closely linked to the women’s health movement, and the technology itself has come to be associated with women’s empowerment, it is appropriate to consider how feminist theory has contributed to analyses of technology. Feminist studies of technology have proliferated over the past two decades, growing out of the feminist critique of science (Hawkesworth 1989; Harding 1991; Rose 1994; Oakley 2000) and science and technology studies. Some of the earliest work came from within the eco-feminist school of thought, espousing feminist standpoint theory and the centrality of women’s biological difference to their values, knowledge and experience of the world (see for example Rich 1977; Griffin 1984). Classic examples of these studies include those focusing on the new reproductive technologies (NRTs), such as in vitro fertilization, amniocentesis and genetic screening (Arditti et al. 1984; Corea 1987; Spallone and Steinberg 1987; Raymond 1993). Corea’s analysis of the new reproductive technologies has been particularly influential, both in spawning similar analyses and in provoking critique (Corea 1985). In *The Mother Machine*, she argues that technologies such as in-vitro fertilization, embryo replacement, artificial wombs and cloning reduce women’s bodies to their constituent parts and functions – eggs, womb, social mother. She suggests that since these technologies emerge from the male-dominated medical and scientific arenas (and are therefore inherently patriarchal), women are being divested of agency over

their bodies and any power that reproduction has historically accorded them. Along with other members of the Feminist International Network on Resistance to Reproductive and Genetic Engineering (FINRRAGE), Corea posits that rather than providing women with new choices, the NRTs in fact conceal a more sinister process through which women's options are increasingly controlled by men¹⁶.

The radical feminist critique of technology as patriarchal and detrimental to women's interests has been criticised from various sides, but a sustained critique has been levelled at its primary assumption of biological determinism (Stanworth 1987; Sawicki 1991; Grint and Gill 1995). By basing their analyses on the biological dichotomy between men and women, radical (or eco-) feminists unquestioningly reproduce traditional ideas about masculinity and femininity that have historically been used to oppress women. Rather than attending to the multiple sites of potential resistance embodied in women's diverse positions vis-a-vis technology, they provide a one-dimensional account of female oppression within the prevailing ideology of patriarchy. Furthermore, they conflate society with technology in a similarly deterministic way, uncritically characterising technology as patriarchal because of the patriarchal nature of society (Grint and Gill 1995). This has led Grint and Gill to conclude that the eco-feminist account of technology is "flawed as a theoretical perspective and disempowering as a political one" (Grint and Gill 1995: 5).

An alternative approach within liberal feminism has been to regard technology as neutral rather than inherently masculine and to focus on the relationship women have to technology in comparison to men. These studies have tended away from the biomedical sphere and focus more on routine applications of technology in the home and workplace, for example information technology (Kreinberg and Stage 1983). Women are seen to have a disadvantage in relation to new technologies because of the roles they have to take up in society which grant them unequal access to objects like computers. Early proponents of this view proposed that women should be given more opportunities to engage with technology, for example through the use of specially designed learning

¹⁶ For a flavour of the radical feminist critique of technology, see for example Mies: "Any woman who is prepared to have a child manufactured for her by a fame- and money-greedy biotechnician must know that in this way she is...surrendering yet another part of the autonomy of the female sex over childbearing to the technopatriarchs" (Mies 1987: 43).

materials and training programmes (Faulkner and Arnold 1985). Critics have underscored the subsequent failure of these initiatives and critiqued the way in which technology itself remains unanalysed in liberal feminist accounts (Karpf 1987). Others have objected to the implication that it is women who must change in order to adjust to the technology, while men, masculinity and male relationships to technology are taken as the unquestioned norm (Grint and Woolgar 1995).

Perhaps the most useful feminist studies of technology, as far as my own research is concerned, are those which see technologies as gendered, but posit this as a result of the culture of their production and use rather than biological or social determinism (Wajcman 1991; Cockburn 1992). Although this body of work discusses technology as *masculine* culture, it has important insights for technology as feminine culture or indeed any culture at all. In 'The Circuit of Technology', Cockburn describes technologies both as a sign and source of women's oppression. The implication of this theory is that technologies are both constituted by and constitutive of social relations, a notion that anticipates Jasanoff's 'idiom of co-production', discussed above (Jasanoff 2006). Furthermore, as Grint and Gill have noted, the 'technology as masculine culture' theory foregrounds gender identity by highlighting how technical competence becomes part of masculinity and technical incompetence part of feminine gender identity. They go so far as to read in these accounts a notion of performativity, since performing particular technological tasks can be seen as performing gender. Again, this provides a useful conjuncture between Butler's theory of gender performativity (Butler 1990) and science and technology studies, which is particularly relevant for the study of how new, so-called woman-controlled, HIV prevention technologies come to be 'gendered'.

Tensions between feminism and constructivism

One of the major tensions at the convergence between feminism and studies of science and technology is the ontological nature of both the subject and power. Implicit in many feminist analyses of technology is the notion of patriarchy, often mobilised (here as in many other areas of feminist writing) to suggest women's universal and transhistorical subordination to men (see for example Rowbotham 1981; Segal 1987;

Walby 1990). This notion assumes a set of social relations that are stable and acontextual; gender is based on the binary categorization of men and women and relations between the genders presumed to be fixed and enduring. Constructivism, however, does not presume the existence of the subject prior to its discursive formation through particular social and historical signifying practices¹⁷. This is as true for gender as it is for the artefacts which form the object of analysis in science and technology studies. In feminist studies of technology, the problem is how to point to the constructed nature of artefacts whilst simultaneously alluding to their construction within a set of *pre-existing* patriarchal relations. As Grint and Gill state:

There is a problem...in that if gender is used as an analytical tool, researchers run the risk of 'black-boxing' it, of treating its meanings as self-evident and stable, producing an artificial analytic closure. This is the basis of constructivists' attack on feminist research (Grint and Gill 1995: 20).

Linked to the above is a tension over agency, with feminists applying normative theories of subject-as-agent, including the subject's capacity for empowerment, while constructivists pursue questions of how the subject is continuously formed through competing discursive and power relations. Ormrod has provided a compelling analysis of these tensions (Ormrod 1995), and proposed both Foucauldian and Actor Network Theory (ANT) approaches as ways to pursue feminist-inflected analyses of technology. She concludes:

...feminist sociology on technology must be able to show *how* relations of power are exercised and the *processes* by which gendered subjectivities are achieved. It must therefore attend to the range of discursive practices and the associations of (durable) materials, meanings, and subjectivities within which gender and technology are defined and differentiated. To do otherwise is to reify gender as binarism and technology as 'thing', whereas we know that they are relational, performative and subject to negotiation (Ormrod 1995: 44-45, emphasis in original).

¹⁷ I make this point whilst acknowledging that there are various strands of constructivism, just as there are various strands of feminism.

She is not alone in advocating this, and indeed there has been lively debate from both sides of the feminist/constructivist divide about the best way to reconcile philosophical and political differences in practice (for example see Berg and Lie 1995; Hirschauer and Mol 1995; Prins 1995)¹⁸.

Power and gender: Foucault and feminisms

The above tensions between feminism and constructivism in science and technology studies mirror the long-standing (and ongoing) philosophical and political debates between Foucault and feminisms. These debates provide important analytical insights for understanding microbicides as a technology that is both 'gendered' and proposed as a tool for women's empowerment, since each deals respectively with power and the formation of gender identity.

Foucault on power

Since the 1970s, Foucault has been one of the most influential theorists in critical studies of both biomedicine and science. Through his archaeological and genealogical studies, Foucault aimed to defamiliarize and contest the seemingly natural categories of social life by exposing them as historically-contingent, discursive constructs. Although Foucault's views evolved during the writing of his oeuvre, and he cannot be said to offer a unified theory of power¹⁹, the subject or discourse, he nonetheless provides a useful conceptual apparatus for the study of medical research. Foucault has admirers and detractors in equal measure, and the use of his concepts is fraught with contests not only over their meaning, but also over their legitimacy. Below, I discuss some of the key concepts of relevance for my own research, acknowledging the debate that has

¹⁸ Even as the tensions between feminism and constructivism move towards resolution, Grint and Woolgar highlight the failure of both schools of thought to thoroughly escape essentialism. For a discussion of the 'post-essentialist' endeavour, see (Grint and Woolgar 1995).

¹⁹ Indeed, Foucault himself was reluctant to be designated a theorist of power, stating, "When I examine relationships of power, I create no theory of power. I examine how relationships of power interact...I am no theoretician of power" (Foucault 1996: 360).

surrounded them. Since a vast amount of scholarship already exists on Foucault, I will limit this discussion to those aspects of his work most salient to the current thesis.

Power, for Foucault was intimately bound up with knowledge because of the way it was mobilised to regulate and normalise individuals through institutions such as the prison and the clinic. Departing from the conventional view that the acquisition of knowledge makes a person more powerful (knowledge=power), Foucault suggested that knowledge was something that made people its subject, since people make sense of themselves in reference to the various bodies of knowledge that are available to them in a given time and place (power/knowledge). Power, then is not something that is possessed but something that is exercised in a diffuse and relational way; we have moved from sovereign power as the archetypal regime to that of disciplinary power:

We must escape from the limited field of juridical sovereignty and state institutions, and instead base our analysis of power on the study of the techniques and tactics of domination. (Foucault 1980e: 102)

Nor should power be understood solely in a negative sense, as in the Marxist sense of repressive hegemonic power, for example as outlined by Gramsci (Gramsci 1971). Foucault saw power as a productive force embedded in daily practices and constitutive of subjects and subjectivity:

What makes power hold good...is simply the fact that it doesn't only weigh on us as a force that says no, but that it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. (Foucault 1980d: 119)

Works such as *The Birth of the Clinic* (Foucault 1975), *Discipline and Punish* (Foucault 1977), and *The History of Sexuality* (Foucault 1980b) are core instances of Foucault's project of documenting the constitution of subjects and bodies through the techniques of disciplinary power.

The Birth of the Clinic has been particularly influential in medical sociology, providing new ways to frame and explore the origins and nature of medical practice (Armstrong

1983; Rose 1990; Armstrong 1994). In particular, Foucault proposed not only that diseases were produced (or 'fabricated') by medicine, but that the very bodies in which the diseases resided were also produced by medicine. Such a claim resonates with the strong programme of social constructivism (Bloor 1991 [1976]; Barnes et al. 1996), which sees all phenomena – both those which depend on social consensus for their existence and those deemed to have a more independent reality – as produced. As Armstrong notes, "It is...a radical step – and one that has been challenged – to argue that the body is created, or fabricated, or invented" (Armstrong 1994: 23).

According to Foucault, the way in which bodies are produced is through surveillance, objectification and normalisation. In his studies both of the clinic and the prison, he drew attention to the techniques of disciplinary power which used surveillance as a means to create self-regulating 'docile bodies'. The development of the human sciences, which focused on the human body as an object of knowledge, spawned institutions designed to measure, regulate and control people and their behaviours. The monitoring of medical and psychiatric patients by an institutionally validated gaze – the medical gaze – was central to such techniques, both in routine questioning and observation, and the more intrusive techniques of looking inside the body (for example through internal probes). Foucault linked the exercise of these disciplinary techniques to the state's ability to bring about production and harness its human resources, a concept he designated 'biopower'. Foucault's ideas on the creation of subjects through the exercise of power ('subjection'), specifically in the context of clinical surveillance and scientific discourses, have been taken up in the field of medical sociology, to analyse phenomena as diverse as dentistry (Nettleton 1989; Nettleton 1994) and teenage pregnancy (Arney and Bergen 1984).

Subject-production and *scientia sexualis*

The project of a science of the subject has gravitated, in ever narrowing circles, around the question of sex. Causality in the subject, the unconscious of the subject, the truth of the subject in the other who knows, the knowledge he holds unbeknown to him, all this found an opportunity to deploy itself in the discourse

of sex. Not, however, by reason of some natural property inherent in sex itself, but by virtue of the tactics of power immanent in this discourse. (Foucault 1980b: 70)

Foucault's first volume of *The History of Sexuality*, in which he traces the processes of subject-production through modern scientific discourses of sex and sexuality, has particular relevance for my own research. Using his genealogical method²⁰, Foucault analyses the evolution of western sexuality and the historical contingency of the body, sex and sexuality. The importance of *The History of Sexuality* lies not in his exposition of the norms of sex and sexuality as socio-cultural constructs, but rather in his analysis of the constitution of sexuality as an object of knowledge via relations of power operating within a specific historical context. For Foucault, sex was not so much about bodies or erotic desire, but rather about technologies of government and technologies of the self (Danaher et al. 2000). The creation of the self through discourse is a major preoccupation in this work, with Foucault demonstrating the normative regulation of 'the deep self' through practices such as the confessional and psychoanalysis. Foucault argues that these historically and culturally contingent discourses on sex – including sexual identity, sexual practices, and the body – are important in constituting the ways in which societies establish the 'truth' of the subject. This gives rise to particular subject categories (e.g. normal or deviant) and effectuates the norms for behaviour in society.

Discourse, as used by Foucault, refers to "historically variable was of specifying knowledge and truth – what it is possible to speak at a given moment" (Ramazanoglu 1993: 19). In the *History of Sexuality*, Foucault attends to the ways in which the techniques of confession spread from the religious to the secular domain and how nineteenth-century medicine appropriated discourses of sex in pursuit of the truth of the subject: "our society has equipped itself with a *scientia sexualis*...it has pursued the task of producing true discourses concerning sex, and this by adapting...the ancient procedure of confession to the rules of scientific discourse" (Foucault 1979: 67-68). The medicalised study of sex and sexuality is a phenomenon that has recurred with

²⁰ Foucault used the term 'genealogy' to describe his method of analysing the historical relationship between knowledge, truth and power through discourse. His aim was to explore not who had power, but to analyse discourses to show how the exercise of power created knowledge.

force since the advent of the AIDS epidemic (Booth 1989; Vance 1991; Aggleton et al. 2000). Biomedical, epidemiological and psychosocial surveys of sexual behaviour have proliferated, spawning new discourses of sexuality at the nexus of risk, rights and national security, to name but a few. Foucault's work prompts us to question the circumstances through which these discourses are created, the means and ends to which they are mobilised.

Foucault and feminisms

During his lifetime, Foucault had little interest in feminism and barely touched on gender in his writing. Indeed, Jones and Porter write, "at face value, it would appear that women did not exist for Foucault: they are spectacularly absent from almost every dimension of his work" (Jones and Porter 1994: 10). This has not stopped a productive dialogue evolving between Foucault's oeuvre and feminist theory over the past two decades (Diamond and Quinby 1988; Butler 1990; Hekman 1990; Sawicki 1991; McNay 1992; Taylor and Vintges 2004; Oksala 2005). Since feminism is a label that encompasses a broad spectrum of theories and viewpoints²¹, it is not surprising that there is considerable divergence in the response to Foucault, be it warm and receptive or thoroughly dismissive. At one end of the scale, core bodies of feminist theory have appropriated Foucault's work as their very foundation; at the other end, there has been wholesale rejection of Foucault's philosophical position. Two areas of the debate which are relevant for the current thesis are the production of sexual identity and Judith Butler's theory of gender performativity; and the subject, power and empowerment. I cite these as two areas for ease of discussion, whilst acknowledging that the distinction between them is a false one, since, at least in Foucauldian terms, one cannot speak of sexual identity without invoking the subject and one cannot speak of the subject without invoking power.

²¹ Alluding to the "parade of feminist approaches", Sylvester playfully jibes, "Feminists parade the geospaces. Liberals, radicals, Marxists, socialists, ecos, empiricists, standpointers, womanists, lesbians, postmodernists, poststructuralists, postmoderns and queers pass in review. Nationalist and critical Third World feminisms join the march. WIDS and WADS GAD about in gorgeous attire. Several melodies play simultaneously. Cheers strike up for the favourites" (Sylvester 1995: 942).

The antagonism that many feminists have felt towards Foucault is encapsulated in Toril Moi's seminal paper of 1985:

What could be more seductive for feminists than a discourse which, like that of Michel Foucault in *La Volonté de Savoir (The History of Sexuality)*, focuses on the complex interaction of power and sexuality?...Alluring as they may seem, however, the apparent parallels between Foucault's work and feminism ought not to deceive us. Feminists ought to resist his seductive ploys since...the price for giving in to his powerful discourse is nothing less than the depoliticisation of feminism. If we capitulate to Foucault's analysis, we will find ourselves caught up in a sado-masochistic spiral of power and resistance which, circling endlessly in heterogeneous movement, creates a space in which it will be quite impossible to argue that women under patriarchy constitute an oppressed group, let alone develop a theory of their liberation. (Moi 1985: 95)

Moi's concerns have been echoed many times since this paper was published, with numerous writers contesting Foucault's notions of power and the subject (for example Christian 1987; Alcoff 1990; Deveaux 1994). Since power, according to Foucault, cannot be possessed by any particular social group, nor is it repressive, the patriarchal oppression of women by men is entirely undermined as a concept. Furthermore, if men are not in possession of power over women, how can women wrest themselves free of their oppression? In other words, women's agency and the struggle for empowerment – the touchstone of feminist politics – seemingly become a flawed ambition.

In spite of this obvious challenge to feminist political practices, numerous writers have used Foucault's analysis of power, surveillance, sexuality and the body to interrogate contemporary aspects of women's lives. For example, Sandra Bartky uses Foucault's docile bodies and Panopticon theses as an explanatory paradigm for women's adoption of daily practices, such as diet regimes and the application of make-up, which produce a female body dictated by patriarchal notions of femininity (Bartky 1988). Susan Bordo likewise uses Foucault's notion of disciplinary power to propose that anorexia and bulimia are part of these same normalizing regimes of femininity (Bordo 1988; Bordo 1989). Many other examples lend support to Jana Sawicki's endorsement of a

Foucauldian feminism “that is compatible with feminism as a pluralistic and *emancipatory* radical politics” (Sawicki 1991: 8). These theorists tend to focus on Foucault’s later works (such as *The History of Sexuality* and *Technologies of the Self*), in which he brought out issues of resistance and suggested a more agential subject than in his earlier work.

Whereas the above examples all use Foucault to problematise the construction of women’s bodies and behaviours within a society permeated by forms of patriarchal surveillance, an alternative body of literature problematises the very notion of woman itself. Judith Butler has been at the fore of a wave of Foucauldian feminist theory that deconstructs sex and gender identities, arguing that these are discursively produced and performed via the body in compliance with or transgression of social norms. Butler started with the premise that sexual practice has the power to destabilize gender, arguing that gender is materialized by repeated acts that come to be seen as natural (sex) over time: “there is no gender identity behind the expressions of gender; that identity is performatively constituted by the very “expressions” that are said to be its results” (Butler 1990: 33). Following Foucault’s genealogical exposition of sex as an effect, as opposed to a cause, of sexuality and sexual experience (Foucault 1979; Foucault 1980a), Butler goes on to argue that sex does not describe a material given, does not precede gender, but rather produces and regulates the way we understand the materiality and sexuality of bodies. In other words, the body does not exist prior to signification. This vision of gender avoids both biological and social determinism, since identity categories are neither stable nor unified, having no fixed referent. On the contrary, they are permanently open to resignification. This, according to Butler, is grounds for optimism within feminism, since the resignification of the category ‘women’ opens up possibilities to expand what it means to be a woman and therefore the potential for an enhanced sense of agency (Butler 1992)²².

²² Butler is critical of feminism’s attempt to emancipate women by mobilising politically around ‘women’ as a fixed and natural identity category, arguing that “the feminist subject turns out to be discursively constituted by the very political system that is supposed to facilitate its emancipation. This becomes politically problematic if that system can be shown to produce gendered subjects along a differential axis of domination....In such cases, an uncritical appeal to such a system for the emancipation of “women” will clearly be self-defeating” (Butler 1990: 4-5).

The issues of freedom and agency have been a point of tension in feminist readings of Foucault, since he has been read as denying the autonomy of the subject and the body's capacity for resistance (Oksala 2005); see also (Diamond and Quinby 1988; Bigwood 1991; McNay 1991). In *The Psychic Life of Power*, Butler analyses the notion of resistance in Foucault's work, asserting that "resistance appears as the effect of power, as part of power, its self-subversion"²³. Resistance is not generated by the body, but through the repetitive acts of subjection which allow for the proliferation of "effects which undermine the force of normalization" (Butler 1997: 93). Butler's denial of the body's capacity for resistance has frustrated some feminist critics; in this and other aspects of her work, the "over-textualization of the body" is seen to reify it in a way that precludes discussion of the lived body and embodied experience (Diseger 1994; Howson 2005), and fails to acknowledge that gender is also located culturally within social relations, institutions, structures and practices. By reducing all to text and representation, 'context' – historical, geographical, economic etc. – is lost. Once the material has been reduced to discourse, and language privileged as the very condition for knowing the material, then the only legitimate object of analysis becomes language. This, as many have objected, forecloses an analysis of the social, economic and political inequalities fundamental to women's and men's experience of gender 'in the real world' (Fraser 1995; McNay 1999; Speer and Potter 2002).

Butler exemplifies the type of western feminism that more broadly has come under criticism from African scholars and activists, who have questioned the relevance of the white bourgeois intellectual elite's framing of women to their own experience (Macleod 2006). Moreover, 'First World' feminist writing has been accused of positioning the 'Third World' as "the suppressed absent trace to the preoccupations of the gender-race-class relations of the 'First World'" (Macleod 2006: 373); homogenizing 'Third World' women into a single category (Mohanty 1991); and mining them as a resource for 'Western' theory (Lal 1999). It is hardly surprising then for Meena, a prominent African feminist, to contend that "feminism is considered by most of our African scholars as a foreign importation which has no relevance to the African situation"

²³ Foucault: "Where there is power, there is resistance, and yet, or rather consequently, this existence is never in a position of exteriority to power...there is no single locus of great Refusal, no soul of revolt, source of all rebellions, or pure law of the revolutionary. Instead there is a plurality of resistances, each of them a special case...by definition they can only exist in the strategic field of power relations" (Foucault 1979: 95-96).

(Meena 1992: 4). Similarly, Essof writes that “unless feminist theory in Africa registers a sensitivity to context and practice, it is likely to remain impoverished, either rehearsing jargon emanating from western-centric frameworks or developing facile generalisations” (Essof 2001: 125).

Work in feminist anthropology speaks to these criticisms by focusing on the symbolic construction of gender within specific cultural contexts (thus in a sense marrying the textual and the material). Biological differences are not seen to provide a universal basis for social definitions (Brown and Jordanova 1982)²⁴, but nor is culturally-situated embodied experience elided through linguistic deconstruction (MacCormack and Strathern 1980; Ortner and Whitehead 1981; Moore 1988; Moore 1994). Furthermore, by locating gender differentiation in the broader structure of social and cultural form, feminist anthropology is more aptly placed to describe the intersection of gender with other forms of difference such as class, race, disability etc. As Moore points out, gender difference is experienced simultaneously with, and therefore in relation to, these other forms of difference, and as such, requires analysis within specific contexts, rather than at the level of abstraction (Moore 1994).

While feminist anthropology, therefore, can usefully direct us to specific contexts, the postcolonial critique of the linguistic turn, to which it is an antidote, should not be taken too seriously. Reducing gender to lived, embodied experience foregrounds the immutability not only of the female body but of the racialised body and asks us to analyse sex and gender only within the terms of epistemological givens. It masks the fact that the identity category of ‘Third World women’ is not merely descriptive, but – as with all identity categories – normative and hence exclusionary (Butler 1992: 15-16). The pertinent task is not to describe the materiality of experience, but rather to enquire into how the intelligibility of experience is produced and regulated through discourse. This is a task that Foucault equips us to undertake, regardless of location.

²⁴ “What cultures make of sex differences is almost infinitely variable, so that biology cannot be playing a determining role. Women and men are products of social relations, if we change the social relations, we change the categories ‘woman’ and ‘man’” (Brown and Jordanova 1982: 393).

Vaginal microbicides as case study: Defining questions

From this literature review, it is clear that there is no scarcity of theoretical material upon which to draw in the social study of HIV and new prevention technologies. Above, I have tried to link eclectic bodies of literatures in a dialogic manner, exploring a series of tensions and convergences relevant to the study of knowledge-making and social order. Since this is an empirical study, I have not attempted to resolve the manifold epistemological and ontological debates, as one might do in a theoretical thesis. Instead, I have sought ways to frame the current study, focusing particularly on questions about what gender is, how science is made, and the nature of power. In elucidating core aspects of Foucauldian, feminist and STS scholarship I have delineated paths into the topic of emerging pharmaceutical technologies for HIV prevention that can be explored through empirical research.

My aim in the current study is to explore the co-production of gender and technology through the case study of vaginal microbicides. Jasanoff's 'idiom of co-production', referring to the way in which the social and the natural worlds are produced simultaneously (Jasanoff 2006), will provide the analytical backcloth to the research. Within this framework, science is neither understood as a simple reflection of the truth, nor as a particular configuration of social interests. Rather, science "both embeds and is embedded in social practices, identities, norms, conventions, discourses, instruments and institutions – in short, all the building blocks of what we term the *social*" (Jasanoff 2006: 3). This is equally the case for technologies. Co-production provides useful ways to analyse problems of essential and stereotypic reproduction, since it underscores how the cultural capacity to construct and validate knowledge and technologies can lead to stability, or conversely flexibility and change. In this respect it is apt for the study of gendered and technological identity-making.

Within this overarching pursuit, I will seek to understand how historically, geographically and culturally contingent discourses contribute to the production of new technologies for HIV prevention. As I have outlined above, Foucault understood discourses as ways of specifying knowledge and truth within a given historical context:

... basically in any society, there are manifold relations of power which permeate, characterise and constitute the social body, and these relations of power cannot themselves be established, consolidated nor implemented without the production, accumulation, circulation and functioning of a discourse. There can be no possible exercise of power without a certain economy of discourses of truth which operates through and on the basis of this association. (Foucault 1980c: 93)

Through his genealogical excavations, he traced patterns of the exercise of power through the interplay of discourses. This understanding of power/knowledge/truth provides a fitting analytical framework for exploring the emergence of microbicides in both social and scientific domains, and the subjection entailed in their production.

The techniques of power through which transnational scientific networks are mobilised to test new products, such as microbicides, will form a further area for enquiry, and how this affects scientific practices, knowledges and identities. Rather than seeing power as repressive and possessed by certain individuals or sections of society (as implied, for example, in common references to patriarchy as the source of women's oppression, or Northern scientists dominating Southern partners), I will use a Foucauldian notion of power as productive, diffuse and relational. As noted above, Foucault saw power as embedded in daily practices and constitutive of subjects and subjectivity; he linked power to knowledge, suggesting that subjection took place through the production and exercise of knowledge (Foucault 1980c). Although the participants of clinical trials are most often taken as the object of enquiry, I will start by exploring how scientists themselves are produced and regulated through the research process.

From a Foucauldian perspective, clinical trials which test new prevention technologies can be seen as a form of disciplinary power, operating through the surveillance and objectification of the body, and creating particular types of subject in those whom they recruit. The disciplinary management of trial participants is institutionalised through daily routines and procedures which function as part of 'the clinical gaze'; power is exercised through the strategies of observation, measurement, examination and comparison of individuals against an established norm. In the trial context, such

strategies may include blood testing, genital examinations, and the collection of demographic and sexual behaviour data. In this sense, the trial can be taken as an extension of the clinic. How power relations are instituted, challenged or re-produced across diverse cultural settings through the trans-national scientific testing of technologies therefore suggests itself as a further important area of enquiry.

Closely tied to subjection is the role of scientific framings of new biomedical technologies in constructing gendered identities. Rather than seeing gender as determined by biological sex and therefore as static and immutable – as does much research in the field of HIV prevention – I will follow Connell, amongst others, in seeing gender as a process. If we use the word ‘gender’ as a verb (I gender, you gender, he/she genders, we gender...), then the social act of gender-ing can be seen to rest not only with the individual, but to operate in interaction with other people, institutions and discourses (Connell 1987). As a social act, gendering works within and across cultures, in historically contingent ways. The construction of gender within a ‘Western’ paradigm may differ significantly from its construction in other cultures; we should not assume the universality of the western concept of personhood, the self, and self-identity, nor take for granted biomedical models which posit two discrete physiological body types as the arbiter of gender. As Moore underscores: “The obvious fact of biological differences between women and men tells us nothing about the general social significance of those differences; and although human societies all over the world recognise biological differences between women and men, what they make of those differences is extraordinarily variable” (Moore 1994: 71).

Finally, it is not only human variability that is at stake, but the variability – or stability – of biomedical technologies across cultural contexts. This has been illustrated in Akrich’s analyses of technology transfer from industrialised to developing countries, in which she disentangles “the links between technical choices, users’ representations, and the actual uses of technologies” (Akrich 1992: 208). Extending this theoretical engagement through an analysis of the Zimbabwe bush pump, De Laet and Mol have written insightfully on fluid technologies, deepening science studies’ hitherto shallow engagement with technologies that emerge in or travel to worlds outside ‘the North’ (de

Laet and Mol 2000)²⁵. As Hine has suggested, “whilst it was once of a vital strategic importance to “go inside the laboratory”, it is now often more timely for STS to pursue the ways in which science is practiced across sites and the ways in which it practices sites” (Hine 2007: 669). In the study of microbicides, as with other biomedical technologies for HIV prevention, the potential multiplicity of the intervention across cultural locations presents a ripe field of enquiry²⁶.

Summary

In the 2000s, evidence-based research into new biotechnologies for HIV prevention abounds, with ever increasing funds for technological research and development. The scarcity of deep social science inquiry into this evolving sub-field of HIV science presents a missed opportunity to further our understanding of the permeable relationship between the scientific and the social. Regardless of the success or failure of these technologies, the process of their development and testing has important implications for the production of ‘truths’ about the epidemic, its ‘victims’ and its would-be vanquishers. Using theoretical and empirical insights from anthropology, sociology, science and technology studies and cultural studies, I have framed an agenda for research that is pursued in the remainder of this thesis. In the following chapter I outline the methodological considerations for such an undertaking.

²⁵ Extending Latour’s notion of ‘immutable mobiles’ (Latour 1987) (“materials that can easily be carried about, and tend to retain their shape” (Law 1994: 102)), de Laet, Mol and Law have explored the spatiality of technoscience, finding that what facilitates technological travel and transfer is not an artefact’s rigidity, but its very mutability (de Laet 2000; Law and Mol 2001).

²⁶ This research will therefore answer Mellström’s recent call for more attention to be given to non-western gender-technology relations: “addressing the relative absence of gender and technology research on non-western contexts should introduce a wider range of cultural perspectives on the gender relations embedded in a diverse range of settings” (Mellström 2009: 888).

Chapter Three

Social Science and Social Contingency: Methodological Negotiations

In this chapter I will lay out the methodological issues negotiated in the study, locating them within the salient debates at the intersections of public health research and STS. I start by discussing the challenges posed by studying a large multi-sited clinic trial, including the unboundedness of the field. Whereas STS has traditionally favoured an ethnographic approach, I outline my decision to use in-depth interview data, both on practical and theoretical grounds. Law has suggested that we “need to think hard about our relations with whatever it is we know, and ask how far the process of knowing it also brings it into being” (Law 2004: 3); I take up this suggestion by paying particular attention to the role of my relationship with the MDP trial in constructing the data for this study. The identity of the researcher as an insider/outsider is fundamental to this discussion and is an issue I reflect upon throughout the chapter. In the current study, this relates not only to my professional role in the MDP trial, but other markers of difference between me and my informants such as race and gender. As part of a reflexive endeavour, I detail decisions made about the choice of sites and informants, my relationship with them and with my research assistant, and how I constructed an analysis out of the data. I address the cross-cultural nature of the study, including the challenge of working across languages, and conclude by reflecting on the ethical landscape in which the study was conducted.

Studying science in action

Instead of black boxing the technical aspects of science and *then* looking for social influences and biases, we realised...how much simpler it was to be there *before* the box closes and becomes black. With this simple method we merely have to follow the best of all guides, scientists themselves, in their efforts to close one black box and open another. (Latour 1987: 21)

Science and technology studies has traditionally used ethnography as a way to get under the skin of science and observe what it is made of. Since the 1970s, laboratory-based ethnographies have been particularly important in grounding the theoretical insights of the field, with scientists followed in the minutiae of their labours by the visiting anthropologist (Knorr-Cetina 1981; Latour and Woolgar 1986; Latour 1987; Knorr-Cetina 1996). As the field has evolved, so have inclinations to more comparative approaches, and the inclusion of multiple study sites (Collins 1985; Knorr-Cetina 1999). In the past decade, the focus has shifted from identifying multiple places in which to study science to studying the spatiality of scientific practice itself (de Laet 2000; Law and Mol 2001). These studies have moved outside of the laboratory, perhaps – as Hess (2001) suggests – as a result of greater interest in issues of culture and power (which some previous commentators felt could not adequately be captured by the sole focus on laboratory life, see for example Golinsky 1998: 11). In my own study, the starting point was an interest precisely in power and cultural multiplicity in HIV prevention research. I also arrived at a point when the laboratory work on the technology in question (PRO 2000 gel) was already accomplished; thus the interesting questions concerned technoscientific fluidity (de Laet and Mol 2000) in the testing phase.

If anywhere could be said to be the location of this research, it is the phase III trial of PRO 2000. This non-geographical designation points to the methodological difficulty of capturing ‘science in action’; the sites where the science of pharmaceutical testing take place in the final stages of microbicide development are multiple and diverse. In the case of PRO 2000 they range from the offices of the small biotech company that developed the drug; to the production line in a US factory in Lexington that manufactures individual gel applicators; to the hallowed offices at Whitehall where funding was agreed to invest in testing the gel; to the academic spaces where the RCT was designed and from which it was coordinated; to the ethics committee meetings (at multiple institutions) during which the study protocol was approved; to the regulatory authorities (in multiple countries) where import licenses for the gel were authorised; to the academic partner institutions in four African countries where trial sites were established; to the trial clinics where doctors and nurses and receptionists and drivers ran the trial; to the homes of participants – and bars, toilets and bushes – where gel was

used; to the community spaces in which it was talked about, illicitly sold and exchanged (perhaps).

The multiple sites I mention are by no means exhaustive, but they demonstrate the enormity and unboundedness of 'the field' and the challenge that even a multi-sited ethnography would encounter. As Law and Urry have observed, "so-called 'globalisation' means that the phenomena...of the social are less about territorial boundaries and states and more about connection and flow" (Law and Urry 2003: 10); and in response Law suggests, "many now think that ethnography needs to work differently if it is to understand a networked or fluid world" (Law 2004: 3). My response in the current study has indeed been to 'work differently', choosing to enquire not through ethnography, but through in-depth interviews in a networked world of which I myself was already an established member. This decision was based both on practical and methodological considerations. Whilst ethnography posed methodological challenges in terms of location, it was also problematic in terms of my professional position within the Microbicides Development Programme; as I undertook the current research, I was also employed full time as a social scientist to coordinate the socio-behavioural component of the MDP301 trial. Whilst I considered participant observation as a method, I decided that having a dual day-to-day role would compromise the integrity of relationships with colleagues, particularly those over whom I had some degree of authority. The decision to use only interviews as data was designed to avoid colleagues' suspicion that they were being spied on or scrutinised, which would have been detrimental to the running and ethos of the programme²⁷.

Limiting the study to interview data allowed me to take in the spatial fluidity of the trial in a way that a full-blown ethnography may not have; for example, I was able to access the worlds of academia, advocacy, politics and trial participation via a carefully considered set of key informants. Thanks to my experience of working on the trial, the choice of informants was well-informed and based on privileged prior knowledge. Access to informants was also facilitated by virtue of being 'an insider', as I discuss

²⁷ Whilst I did not use participant observation as a method in this study, it is impossible not to observe in the course of daily life, which for me involved the trial. Therefore the framing of the study and my interpretation of respondents' accounts will necessarily have been coloured by my 'insider knowledge' of what was going on.

below, both in terms of gaining interviews and in terms of the questions I knew to ask (and was granted answers to). The obvious drawback to this approach was foregoing data about what *actually* happens and what is *actually* said in a 'natural' setting; interview data only provides access to accounts (Silverman 2006). However, in terms of my research questions – framed around a Foucauldian understanding of discourse – the construction of accounts through interview dialogue is an entirely appropriate source of data. As Kitzinger has noted in a discussion of feminist approaches to research:

Constructionism...disputes the possibility of uncovering 'facts', 'realities' or 'truths' behind the talk, and treats as inappropriate any attempt to vet what people say for its 'accuracy', 'reliability', or 'validity'...From this perspective, what women say should not be taken as evidence of their experience, but only as a form of talk – a 'discourse', 'account' or 'repertoire' – which represents a culturally available way of packaging experience. (Kitzinger 2004: 128)

What she describes as 'culturally available ways of packaging experience' resonates with what Foucault referred to as the discursive production of 'regimes of truth'²⁸.

In this study, then, I selected interviews as the most appropriate way to gain access to the discursive co-production of gender and technology in the context of the MDP 301 trial. The accounts were generated as the trial was in full swing, and for the most part concerned discussion of contemporaneous social and scientific processes. However, since I was also interested in the stages of the research immediately preceding the trial – such as the development of the phase III protocol – I was reliant to some extent (in some interviews) on retrospective accounts. There is an epistemological tension in respecting these accounts as indicators of history, whilst simultaneously analysing them as indicators of socially constructed realities. Since no written history of the programme exists, and other documentary sources, such as minutes of meetings, would have suffered from the same problem, this is a tension that remains unresolved. I feel it is nonetheless important to signal its presence at the outset.

²⁸ Foucault: "Truth isn't outside power...Truth is a thing of this world; it is produced only by virtue of multiple forms of constraint...And it induces regular effects of power. Each society has its regime of truth, its 'general politics' of truth; that is, the types of discourse which it accepts and makes function as true" (Foucault 1984: 72-73).

An area in which I felt it important to go beyond individual accounts in my data was in relation to the discursive production of gendered identities in the Zambian trial community. Focus groups have commonly been used in sub-Saharan Africa to collect data on normatively prescribed gender roles and sexual identity amongst both men and women (recent examples include Brown et al. 2005; Strebel et al. 2006; Mankayi 2008; Ragnarsson et al. 2008; Shefer et al. 2008). Although there is a tendency in the literature to treat focus group data in the same way as interview data and simply look for commonly occurring themes, my aim was to use this format to access the social process of gender production itself. The value was in creating a performative space in which to observe not only what people said, but how what they said was taken up, reinforced, legitimised or contested in a naturalistic setting. The topics covered in these group interactions were loosely hung around values, behaviours, and expectations regarding men and women in the study community (for example, “what do we admire in a woman/man?”). The group setting – in which social interaction can be used as research data (Kitzinger 1994) – was ideal for accessing the discursive production of gendered identities.

Field sites and informants

Where can we start a study of science and technology? The choice of a way in crucially depends on good timing. (Latour 1987: 2)

As indicated above, the research was designed partly around the contingencies of my working life. Above all, the timing of this was what gave rise to ‘a way in’ to the study of new technologies for HIV prevention; I was employed by the MDP trial in the UK, but travelling frequently to the African trial sites. From the outset, I was clear about the need to trace the co-production of science and society across cultural boundaries; at the outset the most obvious of these seemed to be the boundary between ‘the scientists’ in the UK and ‘the trial participants’ in Africa. As with all dichotomies, however, this boundary was hard to sustain upon even the most basic of investigations; neither ‘the scientists’ nor ‘the trial participants’ were unproblematic entities, since science and participation were not mutually-exclusive activities and certainly did not observe

'cultural' boundaries. As such, the selection of sites and informants became less about a dichotomous set of relations and was instead guided by the multiple intersections of activity and location characterising a large transnational clinical trial. My informants represented work being carried out on three continents, spanning a diverse array of activities, from biochemistry to grass-roots advocacy.

Because of the size of the trial and the nature of qualitative research (in particular, labour-intensive and time-consuming data analysis), I limited my sample to one African trial site and the key people in the UK/US who I felt were instrumental in bringing the trial into being. Out of the six possible phase III trial sites in Africa, I selected the Zambian site, based in Mazabuka, Southern Province. This was partly a result of practical reasons, such as the fact that the majority of the other sites were already supporting PhD researchers, some of whom were also working on microbicides. Whilst I considered the benefits of conducting the research in South Africa, where a large proportion of microbicide trials have taken place, there was only one site which was not already hosting PhDs. When I applied for ethics approval to conduct the study at this site, the local ethics committee would not allow me to ask participants about their first-hand experience of the trial, proposing instead that "all topics be of a general nature"; they also objected that my application for research did not contain a structured questionnaire. I felt that such constraints would limit the quality and integrity of my research and therefore chose to work elsewhere.

In addition to these practical considerations, there were reasons for positively choosing the Zambian site in its own right. Unlike the other MDP sites, it had been created from scratch for the purposes of MDP in a so-called 'research-naïve' community. Apart from being in the MDP trial network, it was not part of any larger institutional structure, such as a university or research centre. As such, it presented an opportunity to study scientific and social co-production solely as it related to the MDP trial and independently of other scientific work that might be going on in other institutions. Furthermore, at the time I was planning the study, recruitment and retention at the site were waning and there was a strong suggestion that this was as a result of male opposition to the trial in the community (Anon. 2007). Since I had an interest in

exploring the interaction of scientific testing of microbicides with gendered power relations, this provided a relevant context for my research.

Mazabuka, where MDP Zambia is located, is an industrial town located approximately 125 km south of the capital, Lusaka, with a population of 203,219 inhabitants (Central Statistical Office Zambia 2003). The town has largely grown up around Zambia Sugar, the largest sugar producer in the country, which employs over 2,500 full-time employees and an additional 4,000 seasonal workers (Zambia Sugar Plc, 2007 Company Profile). The latter come predominantly from Western Province during April to November to work as cane-cutters on the plantations. Workers are housed on the sugar estate in residential compounds, of which there are six. In 2003, the Microbicides Development Programme conducted a Feasibility Study to assess the possibility of conducting the phase III trial on the Nakambala Sugar Estate. Following successful Feasibility and Pilot Studies, the trial started enrolling in July 2006 and shortly afterwards opened up a sister site in the urban townships of Mazabuka. This clinic recruited women from compounds in and around the commercial heart of the town and along the main road between Lusaka and Livingstone, drawing participants from a population of around 43,000.

Figure 1: Map of Zambia



Before committing myself to research at the site, I conducted a 3-week visit in July 2006 to assess suitability, spending time shadowing the staff and exploring the community with a local guide, Benson. On the basis of this visit and the fact the site was receptive to me doing the research with them, I felt confident to proceed as planned. Since the paragraph above gives a 'factual' but sense-less picture of the study area, I include an extract below from field notes written at the time of my 2006 visit. Because this was my first outing into the town compounds, it gives the first impressions of a complete outsider.

Benson, a community worker, took me around Ndeke compound. It has around 15,000 people crammed into it, starting from what is known as 'Compound Z' and streaming out into 'Overspill' and various other subdivisions. I think it's one of the most extreme cases of poverty I've seen, and it seems all the worse because it is urban poverty, with people packed on top of each other with no space. There's a dirty, sweet smell as you walk around that comes both from local brew – which seems to be drunk in abundance – and the molasses, which has been used to make the streets (it was brought in as a waste product from Zambia Sugar across the fields). In fact, there's really only one main street and it is lined with taverns and small stalls. There's a market with everything you'd want – fish, meat, vegetables...Most people in the compound make a living by selling. And then there are the houses, which are so small and higgledy-piggledy that you wonder how they stay up with so many people inside.

Water is an issue. There are several bore holes from which water is pumped to stands, but the supply system is precarious with pumps prone to breaking. They were all put in by Irish Aid and Plan International, both of which seem to have a big presence in the community. There's a community centre, which is a hive of activity. It houses a school teaching basic skills (such as woodwork and metalwork) to 600 students; the Plan office; a grocery; a women's centre; and the Resident Development Committee Secretariat. Plan is doing a mass of activities, mainly around training: peer educators, traditional birth attendants, widows, community workers...they have nutrition programmes, so many programmes I can't think of them all. The compound is bordered by the sugar

fields at the back. You wonder how much of the profits are returned to the land and the people from which they came...

...

We walked and walked. We came to what is called the 'airstrip' but could hardly be more unlike one - a large wasteland covered in scrub and small bushes, with mounds of earth, craters where people have been digging for clay to make bricks, miscellaneous rubbish and all sorts of hazards. No planes land there anymore. It is likely this land will shortly turn into another compound...We arrived back at Ndeke clinic where we had started. Benson showed me the Nutrition Garden, another community initiative. They grow vegetables - tomatoes, onions, cabbage, ochre, bananas - which they sell in order to get money to buy nourishing food for underweight infants. (Field notes 10 July 2006)

Sampling

Fieldwork took place between October 2007 and June 2009 in the UK, Zambia, and at an MDP Investigators Meeting in Mozambique. The relatively protracted time over which the interviews took place was partly a result of cyclical data collection and analysis, as described by Glaser and Strauss (Glaser and Strauss 1967). Although I started off with a provisional list of key informants, I sampled theoretically, seeking to saturate categories in my data as I built up my analysis. In the UK, I initially selected informants I knew to be key players in the development and running of microbicides research relating to MDP, purposively sampling from the different disciplinary domains such as social science, community liaison and clinical coordination. I also sought advice from colleagues and supervisors as to who they considered to be central actors in the field, particularly when it came to those not employed by the trial itself.

In Zambia, I likewise sought informants from among the different disciplines and grades of staff, selecting those whom I felt would be able to contribute rich accounts. In terms of trial participants, male partners and key community stakeholders, I consulted with the senior social scientist, community liaison officer and my research assistant

(discussed below) in order to locate suitable informants. Amongst trial participants and their partners, I considered suitable those who were currently enrolled in the trial or who had exited within the past 3 months, and who were not shy and retiring. The social science team had already built up good rapport with a subsample of approximately 60 women in the trial who had been randomly assigned to the social science substudy at the town site. Given that there were existing good relations with these women and that I could consult their previous interviews, I decided this was an appropriate group from which to sample. I relied on the community liaison officer to advise on other key informants, selecting those who had some prior knowledge of or involvement with the trial in their varying capacities in the community (e.g. as members of the Community Advisory Board (CAB), or through HIV prevention networks). Table 1 below details the final sample of key informants interviewed in both Zambia and the UK.

Finally, it was necessary to select women, men and CAB members to take part in a series of five focus groups. Members of the CAB were selected by the community liaison officer to be as representative as possible of the overall composition of the group. Women trial participants were randomly selected from the trial database according to age, one group aged 18-30, the other over 30. They encompassed a range of educational and employment characteristics. In order to invite men from the general community (likewise split into younger and older groups), we approached the chairs of 10 local Resident Development Committees (RDCs, which form part of local government structures) and asked them to invite two men in their area to participate. A good range of men of different ages and from different compounds attended, from the unemployed to skilled white collar workers.

Table 1: Key Informants

Location	Type of informant	Main role	Identifier*
US	Key stakeholder	Biomechist, pharmaceutical partner	Neil
UK	MDP trial staff	Clinical principal investigator	Kate
		Clinical principal investigator	Chris
		Community liaison coordinator	Patrick
		Social science coordinator	Dylan
		Statistician	Dominic
		Representative, MDP Programme Management Board (PMB)	Harry
		Consultant, marketing and communications	Gill
	Key stakeholders	Representative, International Working Group for Microbicides	Adrian
		Representative, UK-based microbicides advocacy	Alyshia
		Civil servant, broker in the funding for the trial	James
Representative, international microbicides advocacy		Ellen	
ZAMBIA	MDP trial staff	Clinician & project coordinator	Susan
		Clinical officer	Edward
		Counsellor	Eleanor
		Counsellor	Mary
		Nurse	Gertrude
		Nurse	Lianne
		Community liaison officer	John
		Community mobiliser	Crystal
		Community mobiliser	Colin
		Community mobiliser	Rachel
		Senior social scientist	Marley
		Research assistant	Michael
		Research assistant	Ben
		Research assistant	Margaret
	Key stakeholders	Traditional marriage counsellor	Isobel
		Traditional marriage counsellor	Lillian
		Church leader	Pastor
		Church leader	Pastor
		NGO leader & CAB* member	Frank
		Local HIV/AIDS coordinator	Joshua

*Pseudonyms have been used to conceal the identity of informants. I have used first names in all cases, as I was on first-name terms with all of my informants, apart from the church leaders, who I have designated simply as ‘pastor’.

The things we carry: Cross-cultural fieldwork in Zambia and the UK

Our weighty backpacks...bulge with necessities: computers and field notes, cameras and tape recorders, Cipro and toothpaste, pocket dictionaries...More

important, however, are those things that cannot be measured in pounds, namely the theoretical paradigms currently in favour, the social prejudices and political predilections of the times, and, of course, our personal past. All of these things, too, we carry with us. They simultaneously sustain and demoralize, illuminate and deceive, focus our attention on some phenomena, and blind us to others. (Brandes 2008: 145)

In the section that follows, I provide some discussion of the relationships I brought to the fieldwork and how these shaped the data I produced with my study participants. I was keenly aware of the ‘baggage’ I brought with me to the research; although Brandes alludes above to what we carry with us when travelling to foreign cultures, it is equally important to recognise what we carry with us in our own. With many of my informants I not only had a shared language and culture, but a long-standing relationship by virtue of my role in the trial. All of my informants who worked on the trial knew me as an insider and someone whom they could safely and legitimately discuss the trial with. By the time I started interviewing, I had been a ‘member of the team’ for three years, travelling extensively with colleagues from across the trial network and building up strong professional (and in some cases social) rapport with them. This relationship gave me unprecedented access, both in terms of being granted interviews and in terms of being able to ask questions that might have been considered sensitive or impertinent if posed by an outsider. The following exchange with a high-ranking scientist exemplifies this:

Harry: Internally, when we considered (microbicides), it was to ask the question ‘did they work?’ ...

CM: And have you ever utilised the women’s empowerment line to obtain funding [Harry laughs] or popular opinion?

Harry: [Laughing] What a question! Um...[pause] I think one would have been pretty stupid not to use all, um, potential levers available to you. So I mean, I’m sure you’ve read the first grant application that was written, indeed back in ‘94, when we were first writing the very first grants, I’m sure the first line was about empowerment of women.

My question as to whether populist tactics had been used to gain funding for the science was really a question about spin and public relations. Harry rightfully balks at it (*"What a question!"*), but nonetheless, because he knows me and presumes me to have the answer anyway (*"I'm sure you've read the first grant application"*), decides to answer the question.

Although I believe my insider status gave me better access, it is possible that because of my role within the organisation, people were more careful with what they told me about the programme, applying a filter to their responses. Whilst I was comfortable to ask all of the questions I felt needed to be asked, it's not unreasonable to suppose that an outsider could have framed these more critically, being less dependent on their relationship with the interviewees. There is no way to know what difference this made to the accounts we produced during the interviews, since no comparable work was undertaken by a third party. I have raised the issue here, and included myself in the extracts presented in the thesis where possible, so that the reader can judge the context of production for themselves.

Given the richness of the accounts I was able to generate, I would argue that communality was, to a large extent, an advantage in my interviews, since it was the basis of trust and rapport which led informants to 'speak easy'. Aware of the risk of taking too much for granted in our shared knowledge and understanding of the trial, I had to negotiate an awkward balance of presenting myself as an insider, whilst questioning 'the obvious'. At times, this clearly confused or confounded my informants, breaking the spell of complicity and highlighting altered dynamics in the researcher-researched relationship. The following extract from an interview with Dylan illustrates this tension:

CM: So why do you think everyone was so focused on the fact that women were going to use this (microbicide) covertly?

Dylan: ... just think about Gill's little leaflet for the journalists in which she had a statement that there's no woman who can force her partner to use a condom. Those sort of assumptions, you know, women are absolutely powerless, there's not a single woman in the world who can force her partner to use a

condom...and Gill thinks that's a perfectly legitimate statement. And I said, "you can't put that in 'cause it's not true" ...

CM: And what was the aim of her putting in that sentence, what was she...I don't know the, I don't know this document you're talking about.

Dylan: No? Didn't she circulate it to you? It's a sort of advisory thing for journalists, so that they know what microbicides are, what MDP's doing...that's what she wanted the quotes from NVivo for [that I, CM, gave her] you know... "I love the gel and it's improved my marriage" and all that sort of thing. And, so she's explaining in simple lay terms what microbicides are and why they're needed and one of her statements is that they're needed because there isn't a woman in the world who... can force her partner to use a condom. And...coming back to your question, I mean that's why people are surprised, because there're a lot of people who do assume those sort of things.

CM: So you think those assumptions are flawed?

Dylan: Well they are flawed, you know that.

CM: It doesn't matter what I know...

Dylan: Yah...

Dylan assumes that we both know about Gill's leaflet for journalists and that we both share an opinion on it. Although I had contributed some quotations to the leaflet as part of my job, I had not in fact seen the document itself and so did not know what Dylan was referring to. Once he has explained about the leaflet, he again presumes that we share an opinion as to the legitimacy of its assumptions. His response – *"Well they are flawed, you know that"* – effectively closes down discussion of his views; he refuses the social roles of interviewer and interviewee that normally operate in this context, upholding our collegial relationship. On occasions such as this, communality was a disadvantage that may have limited the analytical depth of accounts (Green and Thorogood 2009).

The extent of communality – and what was shared – obviously varied according to who I was interviewing. In this respect, my position in the trial hierarchy worked to my advantage. Senior scientists in the UK knew we shared the same language, so that they could talk in their own terms about the trial, and at the same time did not feel threatened

by my questions because I was a junior, relatively powerless actor. This very lack of position was what enabled me to speak freely with other junior researchers at the Zambian site, with whom I did not share a linguistic or socio-cultural background. Even where I was perceived as having some authority over them, this was mitigated by my age and gender (young female) and by the fact that I did not display the accoutrements associated with someone in a position of power and authority. For example, whilst living and working at the Zambian site I used a bicycle rather than a car to get around – a source of much mirth amongst all whom I encountered, not least the trial staff themselves. I lived with one of the staff members and his family, cooking and eating with them.

During an interview with Colin, a community mobiliser, he commented to me:

Colin: ...some of the educated women here, they are not as simple as you are. You really amazed me. I'm proud of you.

CM: What do you mean?

Colin: You really...you don't stop amazing me every day. You know, you are my boss; you are a friend, despite your status and...you are exposed, of course (to education), and...you can't wait to prepare food for me, I eat. You give me water, and you are this simple.

The simple acts of providing him with a glass of water during the interview, and cooking a meal that he had been invited by my hosts to share with us, disrupted expectations about our social roles. Although Colin only refers explicitly to education, his remarks occur in a racialized context in which education can be seen as a proxy for wealth, privilege and a particular constellation of cultural markers. His sentiment – which occurred at the end of our interview – underscored the fact that my insider/outsider identity not only affected access and rapport, but was pervasive in shaping the production of dialogue between us. DeVault has suggested that qualitative researchers engage in a “sustained analysis of the structured organizing effects of ethnicity and gender in the stories we are told” (DeVault 1995: 628). The performance of stories about the MDP trial were no doubt tailored for me as a young, unmarried,

white, British, female researcher who partially represented the organisation, as I discuss further below.

Interviewing at the intersections of difference

In order to conduct interviews with trial participants and their partners in Zambia, I needed to work with someone who was fluent not only in the local languages (Nyanja, Tonga, Bemba and Lozi), but also in the language of the trial. The need for this dual competency, as well as a propensity for appropriate interview technique, suggested that someone who already worked locally on the trial social science team would be most appropriate. Although I considered the advantages of working with someone not associated with the trial – in particular, their greater neutrality towards the research topic – the need to maintain confidentiality about trial participants' identity and contact details meant that I opted for an existing team member. The choice of team member was largely dictated by the senior social scientist at the site, in consultation with the project manager and was based on staffing requirements during the period of my stay. Whilst this was not an ideal way to select a research assistant, it was part of the contingencies involved in working within the trial site.

My research assistant, Michael, had been working for MDP Zambia for five years as a social science fieldworker²⁹. He had been trained (partly by me) in social science research methods and had been conducting interviews with trial participants for a number of years. I was initially concerned about having a male research assistant given the nature of my enquiry into various aspects of gender relations, including power in sexual relationships. Two issues concerned me: firstly, the acceptability to respondents and the broader community of a man interviewing women on this sensitive subject; and secondly, the more fundamental issue of how accounts are produced within gendered relationships.

²⁹ Michael is a pseudonym, which I have used so preserve the anonymity of my research assistant, who was also a participant in this study.

On the first point, my concerns were allayed by talking to female staff at the site, who told me that women had had no problem being interviewed by a man, even when it came to sensitive topics such as sexual behaviour. Furthermore, in 2006, the social science team had conducted a feasibility study to assess how acceptable it was for women to be interviewed by men, concluding there were no barriers to this being instituted in their setting (Kalumbilo et al. 2006).

On the second point, it is commonly assumed to be best practice for interviewers to be gender-matched, since rapport is deemed to be more easily created between members of the same sex. The issue of mixed-sex interviewing was important to consider, not only when it came to interviewing women, but also men and couples; how would the dynamics work? Would men feel comfortable talking to me as a woman? Williams and Heikes have challenged the assumption that gender-matching in interviews is the ideal, arguing instead that interviewers analyse how, not whether, gender makes a difference:

Clearly, all interviews are gendered contexts, whether they are single-or mixed-sex. No Archimedean point exists outside the sex/gender system where “unbiased” interviews can be conducted; every understanding about the social world and social identity is necessarily and inevitably partial. (Williams and Heikes 1993: 290)

In the end, I felt that having a male research assistant was no bad thing; with all of my Zambian informants – both male and female – the greatest marker of difference was not simply gender, but gender intersecting with “racial, class, ethnic, sexual and regional modalities of discursively constituted identities” (Butler 1990: 3). As I suggested above in relation to race and ethnicity, there were various markers of difference that were likely to frame the production of accounts in this study, and I did not presume that gender was the only or even most significant of these. Indeed, cultural theorists and anthropologists of gender have long exposed the fallacy of gender as a simple defining category (Moore 1988; Butler 1990; Ortner 1996); the presumption of separate gendered worlds that can only be accessed by same-sex interviewers essentializes ‘male’ and ‘female’ identities and masks a continuum of difference along multiple axes. As Falen notes, “the study of gender need not be a see-saw between male and female

emphasis, but must be an integrated approach to incorporating male, female (and perhaps additional) gendered perspectives” (Falen 2008: 167). A growing body of literature attests not only to the legitimacy but also the productivity of cross-gender research (see for example McKegany and Bloor 1991; Trevino 1992; Presser 2005; Berliner and Falen 2008).

Schilt and Williams have suggested that reflexive dialogue between researchers about their positionality can strengthen enquiry within collaborative cross-gender research (Schilt and Williams 2008: 223). More broadly, Temple has also argued for the importance of debriefing sessions between researchers and interpreters to ascertain how their “intellectual biographies” are reflected in the data (Temple 2002). During the fieldwork, Michael and I had regular de-briefings to discuss how the interviews and focus groups had gone and whether and how gender dynamics had influenced the discussion. In some cases, this was obvious, for example when a female respondent would directly address Michael as a (male) gendered person, as in the following exchange:

Respondent: When I say that, “this year there is no giving birth to a child” - even when you don’t know that your wife got the (contraceptive) pill - I will be taking that pill until the year finishes.

Michael: In secrecy?

Respondent: Yes, because I can be taking it nicely in the kitchen. How are you going to know that I have taken a pill? Do you touch the mealie-meal [she mentioned earlier on that women hide their pills in the mealie-meal]? Okay let me ask you, do you like touching the mealie-meal bag?

Michael: No

Respondent: There is no difference which is there. With the pill, maybe you can say that when cooking you can take it; it is the same with gel. You caress and then you leave him in the mood and say, “I will be coming”. “Where are you going?” “You just wait I will be coming,” then you go that side.

Michael: You use?

Respondent: Yes. Let me give you an example. Gel, I was inserting it in the toilet. He found me when I was just withdrawing the applicator. I just hid it in

my skirts and I came out and he asked me, "What are you holding?" I said, "Sweetie, I am holding my skirt, do you want it to drop? There are children here" ... Wouldn't you believe me?

Michael: Yes

Respondent: You will believe, not so?

In this exchange, the woman makes her point about gender relations with her husband by enacting the scenario with Michael. She directly confronts him on the topic of a woman's ability to act secretly around her husband, invoking norms of gendered space and the gendered division of labour (the discussion of mealie-meal pointing to women's ownership of food preparation and the spaces in which it is done). In this confrontation, Michael is put onto the back foot as a man, as the respondent inverts the interrogatory roles.

On other occasions, the way in which our positionality affected the interview – and the way the interview affected us as gendered researchers – was less overt. For example, Michael confided to me, both informally and when I asked him subsequently in an interview, that hearing women talk about men as 'difficult' had made him question his own male identity and behaviour:

So I was asking myself questions - what else (in what other ways) do I think I'm not like these men (that women talk about in our interviews), but I am them?...You know, I was asking myself, and it's because of the same term, 'men are difficult, men are difficult.' I said, "OK, I'm also being difficult [chuckling], I'm also being difficult"

I kept a daily and weekly fieldwork diary in which I also reflected on these issues, as well as cogitating more critically on my own position in memos when I went back to the data. Through discussing these issues regularly during the fieldwork, it was possible to incorporate gender into the fabric of the interviews; had it not been acknowledged, or had we tried to erase the 'bias', this additional layer of analytical depth would have been lost.

Focus group discussions presented similar issues, except that through them, in particular, I wished to access the normative production of gender identities in commonly occurring social groupings. In many cases, such groupings were all-male or all-female, reflecting the gendered division of labour in the community³⁰. In the focus groups with men, then, I had to debate whether or not to be present if I wanted to mimic the social construct of male-only talk. Since I was reluctant to relinquish input into the discussion, I decided that the benefits of being able to observe the group and direct the discussion outweighed any loss of 'naturalism' that might occur. As with all the data, I recognised my role in co-producing men's accounts in this set-up, and have reflected upon this in the findings.

For the female focus groups, I decided to facilitate with two female research assistants (one older, one younger), who, like Michael, had been working on the project for a number of years. Of course, the identities of the female research assistants remained important in producing the type of discussion that was had; the younger of the two, who facilitated the focus group with women under 30, was heavily pregnant. Early on in the discussion, as the talk turned to marriage, this – and the fact that neither of us was married – became a pivotal interactional moment, as the following brief extract illustrates:

CM: Are they all married?

Research assistant: Are you all married? You, you, you and you, are you married?

All: [Laughter] Yes, we are all married.

Research Assistant: [To CM] They are all married, that only leaves you and me. [To the group] Catherine and I are single.

Participant: What about this [pointing to research assistant's pregnant belly]?!

Research assistant: Me? I am engaged.

All: [Laughter]

Research assistant: You try this and that.

³⁰ For example, it was common to find women talking together in groups and attending women-only events, such as kitchen parties, while men went off to seek paid labour. A kitchen party is an event thrown for a bride-to-be shortly before she gets married. It is attended by women only and consists of pre-marital rites of passage, as well as eating, drinking, singing, dancing, and the giving of kitchenware utensils. For a full discussion of the social and symbolic function of kitchen parties, see (Rasing 2001).

All: [Laughter]

This exchange not only indicated normative views about pregnancy outside marriage, but made evident the fact that even amongst an all-female group from the same community, multiple axes of difference shaped the production of the data. Although I cannot know how accounts would have been forged with a different set of facilitators, I have analysed the data with an awareness of the positions from which we all spoke as participants in the research (DeVault 1995).

Working across languages

Fortunately, the majority of my interviews were with English speakers, enabling me to conduct the interviews myself, as well as transcribe them. Interviews and focus groups in Zambia with trial participants, their partners, and local community men could not be conducted in English, and required someone to interpret. There are various models for collecting data through the use of interpreters (Pool 1994; Esposito 2001; Adamson and Donovan 2002; Temple 2002); Michael, my research assistant, was involved in multiple aspects of the study, including arranging interviews, helping to decide on the suitability of questions and interpreting respondents' accounts. Working together involved a two-way exchange of knowledge, skills and competencies, as described by Maynard-Tucker (2000); I worked to develop his research skills and knowledge of the research area, whilst he worked to develop my understanding of local language and culture. Rather than seeing his work as neutrally conveying informants' accounts through the exchange of words between languages, I proceeded on the assumption that *both of us* were active producers in the research process (Pool 1994). We spent a lot of time discussing the meaning of key terms and concepts, and how they might be translated and interpreted in different contexts.

Following training on the goals of the research and research methods, I initially decided that Michael should conduct the interviews himself, with me sitting in and observing. I made this decision on the basis of previous experience in Mozambique, when conducting interviews through real-time interpretation had led to disastrous interview

data. However, after reading the first couple of transcripts of Michael's interviews, I felt equally frustrated at my inability to direct the process of data collection and follow up on interesting leads. As Esposito notes, "optimally during the data collection process, the researcher processes the meaning of the participant's comments and is able to adjust questions and comments in response to unanticipated answers" (Esposito 2001: 573). As such, we agreed on a third way – a hybrid form of interpretation that allowed both of us some flexibility to direct the course of the interview with the participant. This involved me asking the questions, Michael interpreting into the participant's language, letting the conversation evolve to a 'natural' break, and then him interpreting back into English. If he felt it appropriate to probe and ask follow-up questions, he could so; what I got back in English was not a nuanced word-for-word translation, but more of a summary covering the main points and meaning of what the participant had said. This allowed me to pursue interesting leads and get clarification on any issues that weren't fully explored or developed. The natural rhythm of the interview was maintained as far as possible and I could also judge the content of the interpretation to some extent based on the non-verbal responses of the participant.

All of the interviews and focus groups were digitally recorded. Michael transcribed the interviews directly into English on an ongoing basis and we discussed each one together to clarify the meaning of the interpretation. The transcriptions consisted of translated questions and answers that had taken part in the vernacular, my English questions, his English interpretations, any discussion between us in English, and any discussion that he had with the participants in the vernacular. This made some of the indeterminacies and the evolution of the interpretative process evident; as Pool notes in his reflexive examination of ethnographic meaning-making, the researcher can never attain *the* final interpretation of what his or her informants 'really' mean, "because there is no final interpretation. Meaning in texts (and in the events which generate them) is recursive; it depends on the meaning of what has preceded it and it may lead to a revision of earlier interpretations" (Pool 1994: 52).

Where there was significant ambiguity over key terms – such as 'power', 'control', or different types of relationships – I asked for sections to be transcribed into the vernacular. This then provided the basis for further interrogation of the terms, and

comparison of use and meaning across different respondents. We frequently went back and listened to the audio recordings to tease out the way in which participants had used particular terms or turns of phrase. Because of the language barrier, I was not able to access participants' own words, an impediment that necessarily limited the depth of analysis; as Esposito has observed with translated interview data, "analysis and interpretation are accomplished as one would analyze and interpret a silhouette" (Esposito 2001: 576). Nonetheless, through the steps described above, I tried to ensure the rigour of the interpretative process and to access as much meaning – verbal, non-verbal and textual – as possible.

Analysis

Following the Foucauldian concepts outlined in the previous chapter, my analysis focused on the production and regulation of identities through discourse, as well as the discursive production of power/knowledge. Various methods have been suggested for such an analytical concern, including narrative analysis, content analysis and grounded theory (Clarke 2005: 155). Since I was not interested theoretically in the 'stories' in my data (indeed, I did not use life stories or oral history in this study), I did not feel that narrative analysis was appropriate. Nor was I primarily interested in producing summaries and typologies of recurring themes in respondents' accounts; a thematic content analysis would not have answered questions about the circulation of power through discourse. Although grounded theory has been criticised for not taking power into account at the micro and macro levels, Charmaz has convincingly argued that "the method does not preclude attending to power...Merely because earlier authors did not address power or macro forces does not mean that grounded theory methods cannot" (Charmaz 2006: 134).

Although grounded theory, as outlined by its originators, provides some useful techniques for qualitative data analysis, its positivist assumptions – for example that social theory can be 'discovered' from the data, 'uncontaminated' by the analyst – make it problematic for this research. Various writers have suggested how grounded theory can be used in ways that dislodge it from its positivist roots (for example Hall and

Callery 2001; Clarke 2003; Clarke 2005; Charmaz 2006). Aligning grounded theory with the constructivist paradigm, Charmaz has proposed that “we are part of the world we study and the data we collect. We construct our grounded theories through our past and present involvements and interactions with people, perspectives, and research practices” (Charmaz 2006: 10). In this study, I tried to follow her vision of a reflexive, constructivist grounded theory that digs deep into the empirical while building “analytic structures that reach up to the hypothetical” (Charmaz 2006: 151).

In order to help manage my textual data, I used the qualitative data analysis software (QDAS) Nvivo version 2.0. The use of QDAS has become ubiquitous in qualitative research and its advantages well documented (see for example Richards and Richards 1994; Bazeley 2007; di Gregorio and Davidson 2008). However, methodological concerns have also been raised about the use of such software, for example that it might alienate the researcher from their data and that the computer might ‘take over the analysis’ (Seidel 1991; Kelle and Laurie 1995). Kelle has provided a useful and critical analysis of some of these issues, particularly as they relate to theory building, concluding that “we should address these programs as software for ‘data administration and archiving’ rather than as tools for ‘data analysis’” (Kelle and Laurie 1995: 14). This is the approach I have taken in the current study, drawing most benefit from the ability to code, index, and retrieve textual data systematically whilst travelling across multiple locations (the analytic process spanned work spaces from my flat in London, to guest houses, conference rooms and offices across several African countries).

As should be clear from the description of the interview processes above, analysis ran parallel to data collection, in the manner suggested by Glaser and Strauss (Glaser and Strauss 1967). Glaser and Strauss describe a method of moving backwards and forwards between emerging theory and data collection, and constant comparison across codes and cases in the data. In this study, I started coding as soon as I had conducted the first interviews, transcribed them and imported them into Nvivo. I followed an initial process of line by line coding within individual interviews, ‘fracturing’ the data – that is, opening them up analytically and developing provisional categories. I also started writing memos at this early stage, cycling memo-writing with coding to maintain

what Charmaz refers to as 'analytic momentum' (Charmaz 2006). The memos fell broadly into four types (in practice, there was overlap between these areas):

- A coding journal, kept continuously, detailing initial impressions and insights into the data
- Methodological memos, describing key decisions taken about theoretical sampling, the coding scheme, etc
- Thematic memos, describing phenomena participants referred to in their accounts, for example, rumour typologies
- Conceptual memos, exploring the dimensions of different categories, their analytic properties, and their occurrence across cases.

On the basis of detailed line by line coding in the early interviews, I developed a coding scheme which I used to undertake focused coding of subsequent data. This iterative process involved testing the adequacy of categories against the data (constantly turning between codes and data) and then of moving between cases (comparing data to data). This was a particularly important part of the analysis given the multi-sited nature of my data and the range of participants included in the study.

Although grounded theory also describes the use of axial coding to relate categories to subcategories, I did not feel that applying a detailed scheme in the manner suggested by Strauss and Corbin would add to the analysis (Strauss and Corbin 1998). As Charmaz has suggested, "students who prefer to work with a preset structure will welcome having a frame. Those who prefer simple, flexible guidelines – and can tolerate ambiguity – do not need to do axial coding" (Charmaz 2006: 61)³¹. I used memos and diagrams to explore the relationships between categories and to interrogate the context, conditions and consequences of their occurrence. Through theoretical sampling, I was able to take these categories out into the field to collect additional data that would elaborate and refine them, checking my 'grounded theories' as I went. For example, some way into the research, one of my key informants recounted how PRO 2000 was

³¹ Charmaz goes further to cast doubt on the utility of axial coding, suggesting that the overlay of an analytic scheme on the data may limit the analysis: "...relying on axial coding may limit what and how researchers learn about their studied worlds and, thus, restricts the codes they construct" (Charmaz 2006: 62).

just as likely to prevent HIV infection in men as in women. He identified the silencing of bidirectional protection as a political device to further investment in the development of microbicides. At this point, I was able both to go back to previous data and explore rhetorical strategies for investment, and probe subsequent informants about the silencing of bidirectional protection. Referring to Foucault's work on the incitement to discourse and discursive absences, I was able to see how this might fit into a broader theoretical scheme of knowledge/power relations.

Green has argued that "the key to developing rigorous and valid theory using the constant comparative method is the search for deviant cases" (Green 1998: 1065). Whilst remaining vigilant to 'deviant cases' in my data, I also purposively sampled key informants beyond those who worked on the MDP trial, including others who worked in advocacy, pharmaceuticals and government. The goal of doing this was to see whether the theory I had constructed about microbicides development in the UK stood up in the light of non-MDP accounts. I also used public forums and information in the public domain to 'sound out' hypotheses; for example, on a public advocates' teleconference entitled "Microbicides: the Herstory of a Movement"³², I asked the speakers about the potential for bidirectional protection. This context allowed me to stage a 'live experiment' to see a) whether the silencing of bi-directionality was enacted in practice (as put forward by one of my scientist key informants, see above) and b) whether it was a category with analytical purchase beyond the scientific community. This approach was in keeping both with Glaser & Strauss's call to 'verify' emerging theory and with constructivist emphases on the role of the researcher in constructing both data and theory.

From principlism to performativity: Ethics and method

Law and Urry have compellingly argued that research methods are performative in that "they have effects; they make differences; they enact realities; and they can help to

³² This was a public teleconference organised jointly by the International Rectal Microbicides Advocates (IRMA) and the Global Campaign for Microbicides (GCM), "Microbicides: The Herstory of a Movement". The teleconference was held on 11/06/09 and was open for anyone to join around the globe. A recording of the teleconference was made publicly available shortly after the call at <http://www.rectalmicrobicides.org/teleconf.php>.

bring into being what they also discover” (Law and Urry 2003: 3). As such, research methods are not innocent, but political, since “they help to *make* realities” (Law and Urry 2003: 10). This so-called ‘ontological politics’ demands that we think about which realities we want to make more real and how we interfere as we do our research (since interference is inevitable). There is an obvious ethical dimension to these questions, a dimension of research ethics that has been debated in the academic literature (see for example Parker 2007), but has not come to concern research ethics committees. The latter – at least within the institutional bounds of biomedicine – are primarily concerned with applying universal principles of autonomy, non-maleficence, beneficence and justice, which were formalised following the Nuremberg Code and the Declaration of Helsinki (see Beauchamp and Childress 1994). As a purely non-medical piece of social research institutionally based in a school of public health and conducted across territorial boundaries, this study traversed multiple ethical landscapes. Below I describe the journey through principlism and performativity³³.

Interviews with MDP staff members and key stakeholders in the UK all took place in a work setting, usually the respondent’s own. In Zambia, I had wanted to interview participants (non-staff members) in their own homes or at a place of their choosing (e.g. a neighbour or relative’s house). This was partly to dissociate myself from the medical and institutional setting of the trial and partly so that participants might feel more empowered by being in their own environment (Green and Hart 1999). According to the reimbursement structure of the trial, which I was obliged to follow on ethical grounds, participants only received money for coming to the trial site and not for appointments in their own homes. This was because the money had been designated as reimbursement for travel expenses and was not to be (or be seen to be) an enticement to participate. As a result, many of those I invited for interview insisted on coming to the trial site, usually under the pretext that they had other business nearby or would be passing anyway. From their experience of participating in the trial, the reimbursement system was well known to them, and the way for them to exercise power in the research encounter was in collecting money for their participation. Whereas textbook ethics guidance both limits the terms of reimbursement and posits research participants as

³³ This research was approved in the UK by the London School of Hygiene & Tropical Medicine Ethics Committee. In Zambia, it was approved by the University of Zambia Biomedical Research Ethics Committee.

disempowered altruists, respondents in my study were frustrated by these assumptions, which they readily overturned. The ethical landscape in this instance meant that much of the data was collected in a sterile office environment with a desk and office paraphernalia separating myself and my research assistant from the participants. This context doubtless affected the creation of respondents' accounts, particularly since many of the questions concerned their relationship to the trial.

Written informed consent was obtained from all participants prior to interviews and focus groups, as well as verbal consent as the digital recording started. Whilst there is almost universal agreement in health research of the need for informed consent, the nature of the process has been criticised in various ways. For example, Corrigan has referred to the implementation of informed consent within a bioethical framework as "empty ethics" and an ethical panacea (Corrigan 2003), a position echoed by numerous others (Wolpe 1998; Strathern 2000; Fisher 2007). The critique of informed consent within the social sciences has emerged on several fronts. Some authors have suggested that informed consent overplays the risks involved in qualitative studies and unnecessarily subjects social research to biomedical review (Kent et al. 2002). Others object to 'anticipatory' informed consent on the basis that it is often not possible in social research to predict at the outset what the questions and outcomes will be (Strathern 2000; Miller and Bell 2002)³⁴. In the current study, a two-page information sheet was required to communicate all of the information deemed necessary for prospective participants to make an informed decision to take part. Although I made every effort to deliver this information in the most appropriate way possible for all participants³⁵, almost all participants seemed to find it a more burdensome part of the research process than the interview itself.

In the UK, leading scientists didn't want to be bothered with informed consent, because they didn't have time and seemed confident that they were the ones in a position of power over me and not vice versa. In Zambia, women and men from the compounds were troubled by the fact that they had to sign and verbally agree to the interview when

³⁴ For an overview of these and other critiques, see (Boulton and Parker 2007).

³⁵ For example, in the UK, I emailed the information sheet to prospective key informants and tried to summarise it succinctly when we met in person; in Zambia, information sheets were translated into both Nyanja and Tonga and the information relayed orally. Again, participants were given the information in advance to take home and read, and were encouraged to ask questions when they came for the interview.

all I was interested in doing was talking to them for an hour or so about their experiences of taking part in the microbicide trial and analysing this for a scientific study. Furthermore, having agreed to participate, and ticked and signed that they were happy to do an interview, be quoted etc. they were then presented with a box asking them to tick if they did not want to be included in any of the analyses (see Appendix 2). This box had been specified by the ethics committee in the UK as an extra safeguard for participants. What it did in practice was confuse participants, substantially lengthen the explanations required, and ultimately lead them to ridicule the consent process once it had been clarified.

I was aware that the enactment of research ethics through these principle-led formalities was at once creating a reality that I did not wish to authorise and simultaneously diverting my attention from more salient ethical concerns. These, for me, included reproducing potentially exploitative power relations through the research with informants in Zambia, and negotiating potential conflicts of interest with 'elite' informants in the UK. On the first point, I introduced myself as a student to my informants, indicating that whilst I had a professional role on the trial, it was not within this capacity that I was interviewing them. In addition to foregrounding my own status as a learner, I actively approached my informants as experts, indicating to them that their participation in the trial and use of the gel gave them fluency in a particular knowledge system that I could only access through their accounts. This is a position adopted by numerous researchers working with disenfranchised groups, for example Moore in her research on the technologies of safer sex amongst sex workers (Moore 1997) and Salmon in her work amongst young Aboriginal mothers (Salmon 2007). The interviews were very much geared around their responses to open questions, such that their constructions of the research enterprise were privileged over my own. Although I initially came with an interest in women's 'empowerment', I did not presume that women were powerless victims and did not treat them as such. Likewise, in interviews with male partners, I was careful not to reproduce prevailing assumptions about men and masculinity, which may have reinforced negative stereotypes of men as sexual predators or breadwinners.

In the UK, my main concern was a potential conflict of interest between my allegiance to the trial and my colleagues, and producing a critical piece of research guided by sound data. Being a part of the phenomenon I was studying in this way presented one of the greatest ethical challenges, and one that has arisen for others in similar settings; for example, May, in a study of the politics of evidence-making in health technology assessment writes, “there can be no pretence of my being present in any of these contexts as a neutral observer. Instead, I was (and continue to be) embedded in the institutional trajectories discussed in this paper, sometimes in contradictory ways” (May 2006: 518). Throughout the research process – from interviews to analysis and writing – I have been mindful of my position within the trial and, appropriating Collins, have used “philosophical scepticism, which is safe, legal and inexpensive, to loosen the trammels of commonsense perception” (Collins 1985: 6). That I attempted an ‘ecological’ analysis of the trial, interviewing not only colleagues from my own social world, but actors from the diverse worlds of advocacy, politics, pharmaceuticals and ‘the lay public’, has both contributed to and necessarily drawn upon this scepticism. Nonetheless, my research remains a constructed and partial account – to paraphrase Latour and Woolgar – a constructed fiction about fiction construction (Latour and Woolgar 1986: 282).

Summary

In this chapter I have outlined some of the methodological issues I negotiated in studying the co-production of gender and technology through the case study of the Microbicides Development Programme. Following Law (2004) and others, I have argued that methods are constitutive of, rather than simply reflective of, social reality, and that I, my research assistants and participants actively co-produced the accounts and analysis in this study. By providing an explicit discussion of ‘the things we carried with us’ and the decisions taken about sampling, translation, ethics and analysis, I have aimed to make visible the “sticks and strings and glue from which the ships of knowledge are built” in this thesis (Collins 1985: 6). In the past decade, science and technology studies has begun to focus on the fluidity of technological objects and the spatiality of technoscience across geographical and cultural locations. In this chapter I

have discussed the need – both theoretically and practically – to follow science across its sites of practice. Multi-sited clinical trials are confined neither within geographic nor within disciplinary boundaries, traversing countries, institutions, and (‘lay’ and ‘professional’) communities. As such, this study of (only aspects) of (only one) multi-sited clinical trial is also not confined within geographic and disciplinary boundaries. Whilst adopting the normative style of social research in public health, I have also suggested the limitations to this approach, using insights from STS as a foil to methodological givens.

Chapter Four

Microbicides: The Co-production of Gender and Technology

It is at the point of emergence, before things are completely stabilized or black-boxed, that one most easily observes the mutual uptake of the social and the natural...Important normative choices get made during the phase of emergence; in the resolution of conflicts; the classification of scientific and social objects; the standardization of technological practices; and the uptake of knowledge in different cultural contexts. (Jasanoff 2006: 278)

In this chapter I will use the idiom of co-production³⁶ (Jasanoff 2006) to examine the construction of microbicides as an empowering 'woman-controlled technology', and the simultaneous production of gender in the social, scientific and political arenas. To do this, I will take the example of one specific candidate product, PRO 2000, and explore how it came to be developed by networks of actors from diverse social worlds working in a specific historical context. Following work in science and technology studies which has challenged the assumption that science operates independently of other forms of social activity (Collins 1985; Bijker et al. 1987; Clarke and Fujimara 1992; Gieryn 1999), I will discuss how scientific practice is intimately bound up with prevailing social norms and political agendas, or as Jasanoff puts it, how "the realities of human experience emerge as the joint achievements of scientific, technical and social enterprise: science and society, in a word, are co-produced, each underwriting the other's existence" (Jasanoff 2006: 17).

The basis of this chapter is interview data from eleven key informants who have been central to the development and testing of PRO 2000, as well as secondary material from other sources, such as advocacy materials and minutes from House of Commons debates. The key informants include an investigator and two chief investigators of the MDP301 trial; coordinators of the various disciplinary groups involved in the trial (statistics, social science, community liaison, social marketing, communications); the

³⁶ In essence, co-production is defined quite simply as "the simultaneous production of knowledge and social order" (Jasanoff 1996: 393). For a fuller discussion of the idiom of co-production, see (Jasanoff 2006).

pharmaceutical partner; and representatives of government and international advocacy. The interviews took place between October 2007 and June 2009 in London and at an Investigators Meeting in Mozambique. The majority of the interviews were conducted roughly in the middle of the phase III clinical trial of PRO 2000, which started enrolling in October 2005 and completed follow up in August 2009. During the interviews, I asked both about the historical development of PRO 2000 and the current research which aimed to bring PRO 2000 to licensure. Therefore, although the technology had already been produced to some extent, it was by no means fixed or stable, and my aim was to interrogate the ongoing stabilisation of PRO 2000, in line with Latour's first rule of method: "We study science in action and not ready made science or technology; to do so, we either arrive before the facts and machines are blackboxed or we follow the controversies that reopen them" (Latour 1987: 258).

Microbicides in historical context

So it was a particular window, we were there at a particular time, with a clear vision of where we would go and with products to test that looked plausible. And so, you know, the whole thing was of a time. (Harry, clinical professor and MDP investigator)

In the field of HIV prevention, microbicides are now a given. However, it is only in the past two decades that the 'NPTs' - 'New Prevention Technologies', such as microbicides, pre- and post-exposure prophylaxis and vaccines – have emerged as objects of enquiry. Posited as a woman-controlled or initiated form of HIV prevention, microbicides are also commonly referred to as a tool for women's empowerment. On its website, the Microbicides Development Programme provides the following definition: "A microbicide is an HIV-prevention method specifically for women"³⁷, and typifying the discourse on microbicides, the World Health Organization (WHO) focuses on three key facets of this new technology: power, protection, and women's independence:

³⁷ <http://www.mdp.mrc.ac.uk/what.html>, accessed 18/03/2009.

The availability of microbicides would greatly empower women to protect themselves and their partners. Unlike male or female condoms, microbicides are a potential preventive option that women can easily control and do not require the cooperation, consent or even knowledge of the partner. (World Health Organization 2009b)

So pervasive is discussion of women's empowerment from all quarters – not only advocates, but also scientists, government and the media, to name but a few – that the fact that this is a pharmaceutical product almost gets overlooked.

The idea that a pharmaceutical product could not only address physical and biological problems but also confront social ailments is not new; however, the social remedies of pharmaceutical products tend to be seen as secondary or collateral benefits, and have not usually been proposed as a solution to structural inequalities. With microbicides, the social and the biological have been fused, and pre-clinical and clinical development have come to depend on the notion of women's empowerment. In some respects this may seem unsurprising, given the widely held notion that HIV is a social disease that requires intervention not only at the level of individual behaviour, but also at the structural level (Kelly 1999; Parker et al. 2000; Sumartojo et al. 2000; Weismayer et al. 2003; Fenton 2004; Pronyk et al. 2006; Gillespie et al. 2007). Poverty and inequality in various forms, but especially in terms of gender inequality, are recognised as key to the spread of HIV (Garcia-Moreno and Watts 2000; Rao Gupta 2002; Pronyk et al. 2006) and change at this most fundamental level is seen as a pre-requisite for the long-term control of the epidemic.

Although there is now apparent coherence in the microbicides field about common goals and hopes for a product, with these hopes turning around women's protection and empowerment, the various actors who brought PRO 2000 to the testing arena initially came with a range of agendas and ideas for development. As others have noted, scientific production is heterogeneous, but "at the same time, science requires cooperation – to create common understandings, to ensure reliability across domains and to gather information which retains its integrity across time, space and local contingencies" (Star and Griesemer 1989: 387). In 1990 microbicides did not yet exist;

by the year 2000 PRO 2000 had entered clinical testing and by 2010, approximately 10,000 women had used the technology in the MDP 301 trial. As I will describe below, the successful development of this new technology was a result of diffuse networks of expertise, which created a new knowledge field and garnered political support - both ideological and financial - for microbicides. Drawing on a Foucauldian concept of power relations, which emphasises the historical specificity of productive forms of power, I explore below the conditions of production of new knowledge on microbicides.

From individual to committee: The composition of expertise in forming a new field

Following the 'discovery' of HIV in 1984, hopes were high that a vaccine would be found within a couple of years (Hilleman 1995). However, the challenge proved greater than anticipated and ambitions to develop a successful vaccine within just a few years were dashed by a slew of disappointments in the field. As one senior researcher recounts, *"I spent the period '91 - '06 really out of vaccine work, working exclusively on drug development. And in that time, I'd done some vaccine work which had been massively disappointing, and it was pretty bloody clear in the mid '90s that there wasn't going to be a vaccine any time soon"* (Harry). As such, the search for other means to reduce the spread of the epidemic became ever more pressing, with public recognition by key players that a vaccine was not imminent (Butler 1995; Horton 2003). Adrian told me how in 1990, as head of the Medical Research Council (MRC) AIDS Secretariat, he had started to pursue the question of whether Nonyxnl-9 (N-9), a licensed spermicide, could protect sex workers from HIV. Following a meeting of the Expert Group on AIDS, run by the UK Department of Health, the conclusion was that not enough was known about N-9 and Adrian decided more research was needed. At this stage, discourse centred on the general reduction of HIV, and focused on women only in as much as female sex workers were considered a 'core group' spreading infection to the general population³⁸. Adrian: *"I thought and thought about it and I*

³⁸ Schiller et al have provided a pertinent critique of the cultural construction of AIDS risk groups, noting how "the study of the transmission of HIV in social behaviour became the study of behaviour of members of 'risk groups'", and thus obscured the complexity of the epidemic (Schiller et al. 1994: 1338). This has

said, this seems like such an obvious idea, it may be difficult but... it may be difficult, but um it may be a lot more easier sooner than we'll have a vaccine and the sooner you get something even imperfect to deal with this epidemic, the better the overall impact will be." Disillusionment with vaccine development was also the stimulus for others working in HIV prevention to turn their attention to novel applications of newly characterised compounds that showed antiretroviral activity.

Adrian presented himself as instrumental in getting what he first called "virucides" onto the scientific research and funding agendas. In 1990 he put a paper in to the MRC Directed Programmes Steering Committee, the MRC committee responsible for working on HIV vaccines and new therapeutic drugs, which had a ringmarked budget. He *"felt pretty certain they wouldn't like the idea"*; when I asked why he said bemusedly *"Well because it wasn't scientific, you know, [chuckling] it was, you didn't need to know immunology, you didn't need to know anything, you just were looking for something which would kill the virus"*. Virucides, then, were considered something of a blunt tool for a sophisticated job, and even 'non-science' relative to vaccines. Because of this, a lot of boundary work³⁹ was required to move virucides forward in the scientific world, and as I discuss below, this arguably contributed to the trajectory of their development as a 'woman-controlled' technology.

Ellen, a leading international advocate for women's prevention options, likewise recounted a story in which microbicides were seen as the poor cousin of vaccines – in her words, as *"non-sexy science"*:

I definitely had scientists who said to me, "well, no one's gonna get a Nobel Prize by making a...(microbicide)". Everyone is motivated in science by, you know, the aspiration to make this huge contribution...in the early days, especially, the science of microbicides was very pooh-poohed and...people called it "jams and jellies"...it didn't garner the same attraction, it didn't garner the same prestige (as vaccines).

been echoed elsewhere (Ellison et al. 2003), with some feminist critics identifying biomedically-defined taxonomies of risk as perpetuating phallogocentric interests (Patton 1994; Waldby 1996).

³⁹ I use boundary work to refer here to the rhetorical and institutional demarcating of science from non-science. See (Gieryn 1983; Gieryn 1999).

Ellen came from the field of women's health activism and spearheaded microbicides advocacy, initially in the United States. Whilst Adrian and the other scientists I interviewed were developing microbicides in the UK, parallel work was being undertaken in the US. Ellen indicated that the context in which microbicides emerged onto political and scientific agendas was likely to have differed between these different socio-cultural and political settings; so whilst the response to microbicides in the global scientific discourse was similar, the socio-political discourse may not have been.

In the UK, in spite of what Adrian described as the ambivalence of the Directed Programmes Steering Committee towards his virucide strategy, the fact that it got minuted in the meeting with them enabled him to set up a committee to explore the concept in more detail. Following three meetings of this group, which included *"British, Belgian and US people who'd been involved in this field very sporadically; they were all little groups working in isolation really, and not getting anywhere"*, Adrian wrote again to the board recommending the urgent institution of a Virucides Steering Committee to develop further programmes. The board agreed; as to why, he said, *"Well, the fact that we'd had these three meetings of a group of experts and basically the consensus was yes, let's do it. So it wasn't just me any longer"*. The transformation of sporadically-involved, underachieving academics into a network of "experts" was key to legitimising microbicides as a field of study, a legitimacy that gained further authority through the institution of a committee.

The Virucide Steering Committee sat between 1993 and 2004. Members of the committee came from a wide array of disciplines, with new scientists asked to join on an ad hoc basis; as one member of the committee described:

It had a mixed sort of group of people on it, there were social scientists, there were laboratory scientists, there were clinical trial specialists, there were people bringing an ethical perspective as well...it expanded over time with new people being brought in. It was finding its way, as it were, because it was a new area and it was just, if there was somebody who we thought could contribute, then they would be asked to join the committee. So it grew in that way.
(Dominic, statistician)

In spite of the multi-disciplinary composition of the committee, there were reportedly significant gaps in certain knowledge areas. Adrian recalled that one particularly pertinent omission from the committee's expertise was semen:

So it struck me that sexual transmission of HIV always occurs in the presence of semen. And we had nobody on there - it took me a year to realise this - nobody on there knew anything about semen. So I found a very good guy from the MRC Reproductive Biology Unit in Edinburgh who came to some of our meetings, he gave us lectures on human seminology. And none of us around that table knew anything about it. We knew all about HIV; we knew nothing about seminology.

This moment of realisation is important because it highlights the way in which HIV transmission was conceived along biologically sexed lines, removed from the context of the sexual relationship, and how, historically, scientific expertise has been highly compartmentalised. The juxtaposition “we knew all...we knew nothing” encapsulates the nature of expertise on HIV. The history of focusing on subgroups at risk for AIDS (as designated by the Centers for Disease Control in the first decade of the epidemic) and the ensuing ‘hierarchy of exposure’ led scientists to focus on group characteristics, such as sex and sexual orientation, rather than on the fact that it is the exchange of blood and semen that transmits the virus. By focusing on women (sex workers, in the first instance) as the ‘risk group’, the context of HIV transmission – i.e. the transfer of semen between man and woman during intercourse – was overlooked. By his own admission, it took Adrian, an expert in his field, many years to grasp the significance of this and a year to realise that nobody on the Virucide Steering Committee knew anything about semen.

From national to international: The International Working Group on Microbicides

From the word go, political support was sought for microbicide development, and this became the linchpin of progress, thanks to the funds it made available. Adrian reported that even before the Virucide Steering Committee was set up, he had included a

paragraph on virucides in his annual report to government detailing how AIDS money was being spent. Although he suspected this would get cut out, *“it got laundered through the various superior committees”* and the Secretary of State for Health reportedly responded, *“This is a very exciting new idea! I look forward to hearing about progress next year”*. By approaching existing contacts at the Overseas Development Administration (ODA)⁴⁰ and the Department of Health, Adrian secured new funds with which to set up three laboratories to screen compounds and host a meeting in Geneva aimed at improving international coordination. This, in conjunction with a paper published in *AIDS*, which also called for more coordination, led to another committee being set up – the International Working Group on Microbicides. Amongst the members of the committee were senior representatives of the MRC, the National Institutes of Health (NIH), and the Institute of Tropical Medicine in Antwerp; David Fible, then head of antivirals at the FDA in Washington, was the first chairman.

Between 1994 and 2008, the International Working Group sought to ensure closer coordination of microbicide research programs and to establish consensus on pertinent issues, such as requirements for pre-clinical and clinical testing and criteria for selecting promising leads for evaluation. The Global Campaign for Microbicides (GCM), an international coalition of NGOs spearheading microbicides advocacy, reported that “it serves as a mechanism for the independent/neutral assessment of significant issues by some of the most experienced and knowledgeable individuals in the field” (Global Campaign for Microbicides 2007). The endorsement of this high-level scientific committee by advocates and activists was mutually beneficial; for the researchers, it cemented their public commitment to the cause of women’s empowerment and opened the door to potential funding opportunities; for advocates, it lent a degree of legitimacy, transferred from the ontologically privileged site of scientific knowledge. The fact that the Working Group was declared to provide independent and neutral assessment from an expert base helped to unify the field and solder cooperation between the social worlds of advocacy and science.

⁴⁰ The ODA later became the Department for International Development (DFID).

The medicalisation of powerlessness and its remedy

PRO 2000, the candidate microbicide that was taken forward into the MDP phase III trial, was initially developed by a company called Procept in the United States. Although this company was subsequently taken over by Indevus Pharmaceuticals, and Indevus was taken over by Endo Pharmaceuticals in 2009, PRO 2000 bears the biographical stamp of the original developers. As Neil, vice-president of pre-clinical development at Indevus and responsible for PRO 2000, described:

The company that developed the molecule initially was called Procept and that's where the 'PRO' in PRO 2000 comes from...all of their new compounds got a 'PRO-' something, and I actually said - we were up to PRO 19-something something - and I said, "why don't we call this one PRO 2000, because it's easy to remember, the year 2000's coming and, you know, it might be an important molecule.

And so, whilst the name is suggestive of progress and epoch-making (PRO being 'for', both in the sense of positive and forwards, 2000 being the Millennium year), the molecule is also situated historically – towards the end of the second decade of HIV – and geographically – in the US. Both of these contextual details constitute not just the name but the nature of the microbicide.

At first, when the molecule was found to have anti-HIV activity, *"the initial thought was to use it as an intravenous therapy for HIV infection, so they were going to treat AIDS patients with it"* (Neil). At the time, AZT was the only approved antiretroviral and so this application would have had a strong place in the market. However, following early clinical trials administering PRO 2000 intravenously to HIV positive gay men, it was felt that this application wasn't suitable, given the side effects associated with intravenous use⁴¹. At this point, PRO 2000 was a molecule looking for

⁴¹ Polyanionic agents "had too high a molecular weight to be orally absorbed, and interfered with clotting if given parenterally, and hence they were not developed for antiviral therapy" (Weber et al. 2005: 393). In the early 1990s, Harry was also interested in a class of compounds - sulphated sugars, such as Dextrin Sulphate – which were also initially thought to be potential drugs to treat HIV. He says, *"it was clear, I think, by the early '90s that...they weren't going to be usable systemically as drugs in any delivery system. And we did wonder what else to do with them"*,

a 'technology'; uses and user groups were being constructed and contested. Following and contributing to the trajectory of discourses on AIDS, the drug itself was to move from the domain of the sick gay male body (HIV-infected gay men as a core group) to the unprotected female body (uninfected, vulnerable women as the potential victims of generalised epidemics). This move was ostensibly a commercial one; Neil describes the point at which women became the new user group for PRO 2000, and the concept of women's control imbued into the molecule:

So the way I, the way we came to microbicides was, you know, essentially we were trying to figure out if there was anything we could do with PRO 2000 since it wasn't gonna work as an antiretroviral, and the idea of, you know, a female controlled prevention method had been kind of kicked around a little bit so I kind of looked into it a little further and Lori Heise and Chris Elias had recently published a paper, you're probably familiar with it, it's one of the seminal papers in the microbicide field you're talking about. And I read their paper and I said, "Wow, PRO 2000 would be perfect for this" and so we re-focussed the whole programme on its development as an intra-vaginal microbicide.

It's not clear which of the two frequently cited papers by Elias and Heise (one in *AIDS*, the other in *Social Science & Medicine*) Neil was referring to⁴². In the former, the authors pick up on previous calls for "an HIV prevention technology within the personal control of women" and dispassionately outline the issues in terms of biological knowns and unknowns, clinical testing, programmatic issues, and public-private partnerships (Elias and Heise 1994: 1). The 1995 article is a much more impassioned argument for a complete restructuring of AIDS prevention focused on women's vulnerability to HIV infection. Whilst the authors reiterate throughout the paper that fundamental change is required in terms of gender relations, they nonetheless couple women's empowerment with HIV prevention and simultaneously call for women-controlled prevention technologies:

The AIDS epidemic therefore creates two imperatives: to begin in earnest to work on changing the underlying causes of women's vulnerability and to pursue

⁴² "The Development of Microbicides: A New Method of HIV Prevention for Women" was originally written as a working paper, before being adapted for publication in *AIDS*.

vigorously every means possible to strengthen women's immediate ability to protect themselves in the face of the economic and cultural forces currently allied against them. This, in turn, means placing greater emphasis within existing AIDS programmes on empowering women and committing major resources to developing new prevention technologies – like vaginal suppositories or foams lethal to the virus – that women can use without their partner's knowledge or consent. (Heise and Elias 1995: 931)

Microbicides advocacy such as this initially started in the field of women's health and contraceptive research and development. Zena Stein, a South African epidemiologist, was one of the first major voices in the field; her article, "HIV Prevention: The Need for Methods Women Can Use," published in the *American Journal of Public Health*, drew widespread public attention to the issue. Stein was unambiguous in linking women's empowerment with HIV prevention using women-controlled technologies:

The proposition of this paper is that the empowerment of women is crucial for the prevention of HIV transmission to women. It follows that prophylaxis must include procedures that rely on the woman and are under her control. A wider range of chemical and physical barriers that block transmission through the vaginal route must be developed and tested. (Stein 1990: 460)

The link made between HIV prevention, empowerment and technology was a fortuitous one for Indevus at this point in time, when they had a molecule with anti-HIV activity to develop and commercialise. Neil described Indevus as an opportunistic company; its portfolio, he said, consisted mainly of urology and endocrinology drugs, but they were interested in PRO 2000 as a novel candidate that they could add value to through clinical trials and the registration process. Because of the global interest in women-controlled technologies and the government funding being made available to test new products of this nature, PRO 2000 was a good commercial prospect for the company at that time:

I think at that particular time they were kind of just being very opportunistic and looking for things and they didn't have to pay much for PRO 2000, you know, it was just that very small up-front payment and they thought, you know, it's an interesting opportunity and it's heavily government-funded, if it works there could be a big, a big pay-off. (Neil)

Neil was frank about the fact that women's empowerment was interesting from a commercial point of view; unsurprising, perhaps, given that microbicides were forecast in 2002 to have a peak market size of US\$5 billion (Pharmaco-Economics Working Group of the Rockefeller Foundation Microbicide Initiative 2002). In my interview with him, he discussed the company's obligation to shareholders to be commercially successful and said the way to do this was to identify and meet consumers' needs. This discourse of consumerism is not one that readily fits with discourses of empowerment. However, where empowerment becomes an 'unmet need' in the medical arena, as Neil demonstrates below, it becomes possible to meet that need and therefore to commercialise the solution:

Neil: ...when I presented it to the scientific advisory board, you know that idea of a woman-controlled method really did resonate with them and you know, the impression was that this could be commercially, you know, successful.

CM: Right. So would you say it was a marketable commodity, in a way, the idea of women's empowerment?

Neil: I think, um, ...marketable in the sense that there was an appreciation that it was an unmet need and that a vaginal microbicide for women might fill an important unmet need, a medical need, and I think that there was that recognition from the beginning, I think.

It's important to note here the way in which Neil uses the clinical language of "unmet need", commonly associated with family planning, to bring the social into the medical domain. First of all, women's empowerment is described as an unmet need and Neil then equates this with "a medical need". By medicalising women's lack of power, it becomes possible to find a medical solution to empower women – a vaginal microbicide.

Neil was not alone in translating women's social needs into medical ones. Adrian, often identified as one of the first advocates for microbicides, was persuaded of the need to give women a product they could control without the consent of their male partners. During the 1990s, the discourse on women and HIV took on a new dimension; by 2002, when Kofi Annan stated that "AIDS has a woman's face" he hit on a crest of sentiment that had grown through repeated discussion of the 'feminization' of the epidemic (Annan 2002). Although this discourse became so entrenched as to be treated as a self-evident fact⁴³, Ellen drew attention to the work that advocates had done to effect this discursive shift: *"As the power of gay men in HIV was on the ascendancy, I think you started to see the rise of women and HIV and that became...a mantra and became very mainstream then...But the microbicide thing was always ahead of that. So we didn't actually ride that wave, we were like pushing the wave almost"*.

At least in part through women's health advocacy, then, the idea that AIDS was a women's disease became common currency, and was an important persuasive device in the microbicides field. The fusing of women's biological vulnerability to HIV with their social vulnerability to infection seamlessly led to the medicalisation of powerlessness and the search for a medical solution to it:

If you go back to my very original paper that I produced for the Committee in - I think it was December 1990, the MRC main committee - I said that, you know, the reason people aren't using condoms is because the man won't use them, for various reasons, and that a point about this: the woman would be able to take the initiative herself. In other words, empowerment. So that was a major thing and later on - it was mainly the men who were getting infected, I suppose from sex workers, I'm not sure - but when it became a woman's disease, you know, HIV wears the face of a woman and now more women are being infected than men, once that was appreciated, then of course it became not only women's empowerment but women were very vulnerable and needed to be...these microbicides to be able to protect themselves. (Adrian)

⁴³ Peter Piot, Executive Director of UNAIDS reported in 2004, "Today we can safely say that the face of the epidemic is an African woman" (Reaney 2004).

In this extract, we again see the shift in discourse from women as a circumscribed core group (*"it was mainly the men who were getting infected, I suppose from sex workers"*) to all women as a vulnerable population in need of medical intervention (*"it became a woman's disease...women were very vulnerable"*). The discourse of women's vulnerability and powerlessness constructed men as the enemy in the fight against HIV, and this engaged some in thinking about microbicides in warfare terms; for example Adrian recalled, *"We used to call them 'stealth virucides' like the stealth bomber"*. Covert use became a presumed feature of microbicidal products and was directly linked to the discursive production of gendered subjects by advocates and investigators working in this field, as discussed below.

Of men, women and gels: The discursive production of gendered subjects and technology

Dr Piot: The biggest problem are the men. The driving force in this epidemic is male sexual behaviour. As long as that does not change we can empower these fifteen year old girls but when they are raped that approach is not very useful...

..

Mr Worthington: One of the things which has puzzled me, you referred to the behaviour of men, which is appalling probably everywhere all of the time, but we put all of the focus on condoms. We know what is wrong with condoms as a method and there seems to be extremely little attention paid to the female condom and microbicides. Am I right in that?

Dr Piot: What you are saying is music to my ears. (Extract from: Select Committee on International Development Minutes of Evidence, Examination of Witnesses (Questions 480 - 499), Tuesday 18 July 2000, Dr Peter Piot)

The seed had now been sown for a prevention product to empower women in the fight against HIV and the concept of female-controlled technologies was rooted. In order for work on microbicides to obtain funding and progress, it was imperative that there be a coherent subject in need of the technology. It was not enough that this should simply be

'women'; as noted above, during the early 1990s women sex workers were seen as a core group, the reservoir of infection from which the disease was spreading to the general population (Eckholm 1985; Van De Perre et al. 1985; Kreiss et al. 1986; Padian 1988; Rosenberg and Weiner 1988; Scambler and Paoli 2008). A new type of woman was needed, an acceptable face of the epidemic that would garner sympathy and support applications for funding to develop microbicides. Regardless of the science, the subject of the new technology was to be the victim of social, cultural and economic inequalities, the powerless married woman. As Ellen remarked to me on the subject of political lobbying, "*we had to play up - which I always hate - the kind of vulnerable married woman thing*". One of the first scientists to develop microbicides in the United Kingdom, Harry, was also clear about the need to capitalise on the notion of the powerless female user:

Harry: It's absolutely the case that I and I don't think Celia or probably Kate or Dominic, in 2000, when this was first beginning to be articulated, it wasn't seen as an issue around women's empowerment.

CM: To you or to others?

Harry: Internally, when we considered it, it was, it was, to ask the question "did they work?" or "did this one work?"

CM: And have you ever utilised the women's empowerment line to obtain funding [Harry laughs] or popular opinion?

Harry: [Laughing] What a question! Um... [pause] I think one would have been pretty stupid not to use all potential levers available to you. So I mean, I'm sure you've read the first grant application that was written, indeed back in '94, when we were first writing the very first grants, I'm sure the first line was about empowerment of women.

This extract leaves no doubt as to the divergence in priorities between scientists and those for whom women's empowerment was the primary issue. Harry was not alone amongst my informants in articulating that the development and testing of microbicides was first and foremost a *scientific* question – did they work or not? However, in a clear manifestation of social and scientific co-production, the construction of gendered subjects became a necessary part of drug development. How the scientific community

defined and produced the end user of microbicides is fundamentally intertwined with the technology itself and the research designed to test it. Discussions with senior investigators showed how through an essentialising discourse of women and men, it was possible to produce a subject in need of medicalised empowerment.

While it would be wrong to suggest that the investigators all shared a common view of women and men which they mobilised to further the research agenda, a discourse around disempowered women and irresponsible men did form during the development of the trial. This was remarked upon by the senior social scientist, Dylan, who bemoaned the fact that:

there's...always such an assumption that, you know, poor old women are always the victim and, you know, these guys are dreadful, they won't use condoms and, you know...women can't persuade them to use condoms and it's that whole sort of...feminist politically correct discourse that makes people think that it's essential that women use these things secretly.

Interestingly, the social scientists in the group tended away from discourses of empowerment while their medical counterparts re-produced and perpetuated them as the research progressed. Some of the most senior male investigators were core proponents of the 'victim' women and 'dreadful' men discourse. Talk of women and men drew heavily on a biologically deterministic view of sexual difference, with women frequently referred to in terms of their reproductive capacity and men as promiscuous inseminators. As one senior researcher noted, "*women are the, you know, repositories of the family and the creation of the next generation*". The exculpation of women was further established by conferring on them 'innate' qualities that turned around caring and nurturing, sacrifice for the good of the family, communication rather than obstinacy and responsibility-bearing. Women's nature could only be elaborated in this way by reference to their binary opposite in men, and thus men were typically described as irresponsible, uncaring, pleasure-seeking and driven by their sexual urges rather than concern for the good of others. Various examples were drawn upon which appeared to legitimate these givens, for example "evidence" that men won't use condoms; a feasibility study in which men said they would only accept microbicides if the products

didn't interfere with their own pleasure; and a study of prevention of AIDS-related illnesses in which men had "damaged" the study by protesting when their wives enrolled. The following extract is illustrative:

And they (the women) were post-natal so in fact they were often enrolled just soon after they'd delivered their baby in hospital, and many of them hadn't been tested up until that point in time. So they were tested, found to be HIV-positive, offered the opportunity to join the study. They went back home and, well in some cases all hell broke loose because in fact their husband discovered that a) his wife's been tested for HIV and of course, like husbands do, he blamed his wife for the fact she was positive even though in fact he may be the one, most likely was the one who actually infected her in the first place. (Dominic, statistician. First emphasis added, second respondent's own)

Here we see the rehearsing of an old discourse on wicked men and innocent women. Women are described in their maternal role as wife and mother and men are generalised about using the phrases "of course", "like husbands do", and "most likely" to implicate all men in the infection and blaming of innocent women.

Whilst some of the researchers drew on previous experience and social research findings (e.g. about condom use) to paint the need for a product women could use alone, others went back to biological basics to argue for this. Describing the conceptual appeal of microbicides, Chris, one of the clinical principle investigators said:

For a heterosexual sexually transmitted disease, you don't have to actually prevent both sexes, for example, a single sex vaccine will work in a heterosexual sexually transmitted disease. You only need to block one...one partner, so it's ok if you have a female-only intervention, it's gonna block the transmission cycle.

As we continued to discuss 'women-controlled' prevention methods, Chris went on:

...with sexually transmitted diseases it's fairly obvious, for venereologists, that you're more likely to get compliance with an intervention in women than with men, you know, it's just that...

CM: Really, with women than with men?

Chris: Well, yeah, well, yeah, because women are responsible, aren't they? This is the sort of Desmond Morris type of theory, that you know, that men are out there to... you know, inseminate their genes into as many women as possible and women are there to try and maintain the most stable structure in which to bring up their children. And that usually translates into having a single partner that they then, you know, form a long, a very long-term stable relationship with. So men can't help it... I mean, I, I, I'm a bit old-fashioned, but there's a lot of, a lot of the old-fashioned things have a very substantial germane truth in them, so, I mean, not all men are heterosexually promiscuous and don't care two hoots, but there is that trend in men, they...it's just...it's all that testosterone imprinting in-utero, isn't it, I mean, [laughter] you can take the gonads out of a male sheep after, you know, one quarter of the in-utero time and they still come out as rams, you know the imprinting of the cells is very early in gestation under the influence of the testosterone. So, yeah, no, it seemed quite logical you could have an intervention that women would be more adherent with.

In this case, the biological and epidemiological rationale for microbicides takes precedence over moral arguments. Epidemiologically-speaking, you can stop the transmission-cycle by intervening in one sex or the other. Biologically-speaking it makes more sense to intervene in women than men, because women, by their very nature, are more compliant (and men, due to their testosterone levels, can't help being uncontrollable). So although the tone and legitimating devices of this rhetoric vary from that described above, the discourse nonetheless constructs women as monogamous, maternal and passive; and men as promiscuous, uncaring and irresponsible.

Having established women's vulnerability to infection, their biological suitability for intervention and the moral need to protect them, it became obvious to develop a women-controlled technology. As mentioned above, microbicides were initially

conceived as “stealth” products that could circumvent men altogether. However, it was not only women’s use of the product that was proposed to be covert; the fact that the technology might also protect men was also ‘covered’ up. As I have been discussing and will elaborate on below, there were reasons why it was advantageous to position women as the sole beneficiaries of the technology, and to exclude men from microbicides discourse except in negative terms. In discussion with Adrian it became clear that the absence of men from the microbicides prevention discourse was socially rather than scientifically motivated. He admitted: *“I would be very surprised, if Nonoxynol-9 had worked, for instance, or Savvy more recently, if that had worked and protected women...I just wouldn’t believe it if it didn’t protect men.”* And reverting to a scientific discourse, he described the potential for bi-directional protection in PRO 2000’s mechanism of action:

We don’t know that microbicides will protect a woman, it’s never been shown yet. But we’re assuming that will happen, which it will. So on the same grounds it’s protecting a woman it should be possible to protect a man, because the principle on which these things work - for instance, er, let’s take for example PRO 2000 gel, which binds to the V3 loop and prevents the virus from attaching. I mean that’s a crude explanation, but let’s say that’s how it works. The healthy woman inserts this gel and ... she has sex with a man that’s infected, his semen has to mix with that gel or somehow the gel coats every vulnerable surface, and it has to attach to the V3 loop of the virus - and the PRO 2000 molecule does that - and that will protect the woman. Now how long does it have to attach, what’s the time window? Not very long. The virus enters the woman, it’s going to attach to its receptor lymphocytes fairly quickly, so it doesn’t have very long. So what we’re saying is we think that’s going to protect the woman. Think of it the other way - the man is uninfected, the woman is infected...she inserts the gel, she is shedding virus into her fluids, that is going to be around for an hour or longer, I don’t know, it depends, but it’s going to be around for much longer than in the case of the man’s semen. So the chances of that microbicide destroying or attaching to the virus that she herself is shedding is much greater than...So in other words, that should really, if it protects the woman, it’s jolly well going to protect an uninfected man.

From this biological point of view, then, men are more or equally likely to be protected by PRO 2000 than women and so rather than the technology being a women's product, it could also have been a men's product or a product for both sexes. So why has bi-directionality been absent in discussions and descriptions of vaginal microbicides? Following on from the above quotation Adrian continued: "*Now that has never been published, it's never, as I say, it's never really discussed unless I raise it and so on. Because it's speculative.*" He located the failure to publish on bi-directional protection in the fact that it was speculative, but as he also noted, protection in women was also speculative given that the product had not yet been tested. The sticking point, as he saw it, was that you can prove in trials that the product protects women, but you can't prove that it protects men. Therefore, on the one hand, the silencing of bi-directionality could be seen as an inevitable response to the limits of scientific knowledge production. However, if bi-directionality were simply not discussed because it wasn't possible to prove it, it's unlikely that the technology would have been framed so completely as a woman-controlled product. In fact, I suggest that the silencing of the potential protection of men was a political and commercial move, subsequently legitimated by the scientific impossibility of proving it. By labelling protection in men as "speculative", it is thrust outside the domain of scientific knowledge and is thereby ontologically demoted.

The limits of scientific possibility were not only invoked to legitimate why microbicides were only being tested in women, but why PRO 2000 was only being developed as a vaginal, as opposed to rectal, microbicide. Several informants raised the fact that it is much more challenging, scientifically, to develop a rectal microbicide because of the physiology of the rectum and the efficiency of HIV transmission via this route⁴⁴. When probed, however, it became apparent that whatever the scientific hurdles to developing a rectal microbicide, the social conditions and consequences of developing a product for rectal use made this still more problematic. Neil, from the pharmaceutical company, said they had considered rectal development, but that it was "*obviously a little bit more of a delicate thing*" and that whilst their marketing department thought it could be highly successful to pitch it to gay men in industrialised countries, this was "*definitely not a high priority*". Although he was not explicit about the reason why rectal use was

⁴⁴ Biological challenges to rectal microbicide development have been well-documented in the scientific literature; for a brief overview, see (McGowan 2008).

not high on the agenda, showing continuities between the sexual behaviour of the mainstream (i.e. heterosexual men and women) and 'deviant' risk groups, such as gay men, may have been a deterrent. It's worth noting that the US FDA has never approved a condom or other device for anal sex and that approval of technologies for rectal use is considered a "political minefield" (Scarce 1999)⁴⁵.

Chris provided additional reasons why the development of a rectal product was not gaining much ground. Firstly, he discussed how the available research expertise is in the domain of women's reproductive health and not rectal physiology:

...the number of people that've done kind of rectal research is very...traditionally, in medicine, is very small, it's really just the STD doctors. The surgeons, you know, are mainly...the general surgeons, are mainly doing sigmoidoscopies and going up into the sigmoid colon and then full colonoscopy, the whole range of the colon. Very few people actually use protoscopes, it's really only STD physicians who use protoscopes. So with HPV research on the cervix, there was this huge mass of gynaecologists also driving the research as well, but very little knowledge base about rectal... rectal examination, rectal physiology um...

CM: Why's that?

Chris: Why? Because...because, it's only really doctors looking after gay men who want to come for checkups for STDs that ever look in the rectum...there's very few people around who regularly look in the rectum and take swabs from the rectum. So there just isn't that sort of knowledge base of people out there.

He related the popularity of gynaecological research to the social acceptance of examining the female reproductive tract, as opposed to the rectum: "*a no-go area, the bottom really, for heterosexual male conceptions*". This is perhaps indicative of the long history of the medicalisation of women's bodies (Ehrenreich and English 1979; Corea 1985) and the continuing stigma of homosexuality and its practices in some

⁴⁵ Scarce reports that, "Sodomy laws often provide a rationale for squelching any government act that might encourage safer anal sex. Such was the case with the Reality Female Condom. Formerly named "Aegis" and pitched as a gender-neutral barrier pouch for rectum and vagina, the device was restricted to vaginal use by the FDA, citing sodomy statutes as a deciding factor" (Scarce 1999).

spheres of public life⁴⁶. It is notable that the baseline against which Chris measures conceptual deviation is the heterosexual male, hierarchically the most dominant group and clearly still powerful in determining the knowledge base from which health research proceeds.

At the time we did the interview, Chris was in fact conducting a phase I rectal safety study of PRO 2000, but had said it wasn't possible to do the study in heterosexual couples:

...consent would be an issue...maybe, maybe there are lots of women out there who are having consensual anal sex within their heterosexual relationships and both partners maybe would be willing to agree to, you know, having consensual anal sex within their relationship for a trial. But you know it's difficult, the ethics committee...we're getting into quite small print areas here and the ethics committee has...it's a bit like the jury, it's got to have normal men in true, you know, men and women and you know, the average folk, so you've got a bit of a job persuading average folk about consensual anal sex, it's just - it's a bit like legalising heroin or something, actually there's a very powerful argument to do it, but it's so...it's...it's a difficult area for ordinary people to actually see the logic in legalising heroin. It would be very difficult for an ethics committee to see that all the people in your trial, there's this notion of rape around heterosexual anal sex, that's what comes to people and you know, the domination of men over women is subconsciously a more powerful metaphor in terms of anal sex than vaginal sex because it's not a...it's not a route that results in conception, so...it's just a complex area.

Chris is clear that the design of the study was directly related to social conceptions of appropriate heterosexual behaviour, which does not include consensual anal sex. The

⁴⁶ Scarce supports this with the assertion that "scientists and public health experts have long approached anal sex with a mix of anxiety, scorn and denial". He quotes Dr Kelum, one of the first researchers to test rectal microbicides in human subjects, as saying, "Most of the researchers in this field aren't just homophobic, they are erotophobic" (Scarce 1999). Dr Carballo-Diéguez, a professor of clinical psychology at Columbia University, is reported to have told a meeting of the US Rectal Microbicides Campaign that he had had to call one of his rectal microbicide studies 'topical microbicide acceptability in high risk men': "We have to play this infantile game," he commented, "avoiding all mention of works like 'gay', 'MSM' and 'rectal'. It gets past people who are hostile to gay men's work" (<http://www.aidsmap.com/cms1065822.aspx> accessed 17/11/2009).

bounds between the social and the scientific are blurred by the institution of the ethics committee – composed of “the average folk”, but arbitrating on the realm of the scientific. In a good example of how the social, the scientific and the technological are co-produced, we see how gender is produced by reference to sexual difference and reproduction, how compulsory heterosexuality is instituted through denial of anal sex as a legitimate heterosexual activity, and how science follows and thereby reproduces social prescriptions on gender. Finally, relating this to the development of PRO 2000 first and foremost as a vaginal microbicide, Chris linked the social to the political:

To get into specific research to prevent sexual transmission through alternative sexual practices, if you like, if that's how you want to describe anal sex, it is a bit...a bit challenging for many of the Daily Mail readers, yup. And the government, I'm afraid, has to go by the Daily...that's, that's...they're all so centrist now, that you know, we're not living in a socialist, progressive...we're not living in an era when we can expect any more socialist progressive administrations for the foreseeable future.

Similar apprehensions were raised by advocates in the US around advocating for rectal microbicides at a time when to do so might jeopardise funding for microbicides from what was then, circa 1999/2000, a highly conservative administration. Ellen shared Chris's belief that social apprehensions around homosexuality inhibited the development of rectal technologies:

People don't like to think about that (rectal use), they don't feel comfortable, there's been fear that...sort of raising the issue of rectal use could - and it could, quite frankly - undermine the vaginal microbicide programme, because of the crazies that are in Congress and you know, all of a sudden you get wind that NIH is funding rectal microbicide studies and the whole funding for the microbicide programme could be cut off tomorrow.⁴⁷

⁴⁷ Anna Forbes, deputy director of the Global Campaign for Microbicides (GCM) spelled this out in more detail during a public teleconference: “...other people who were working on microbicides advocacy [were] really discouraging GCM from even mentioning rectal microbicides, even talking about the issue...in 2000 George W. Bush was campaigning for president the first time, there was a very big, ultra-right, ultra-conservative political spirit abroad; Newt Gingrich had been Speaker of the House, the US House of Representatives...[was] very, very conservative, particularly around sexual politics ...he'd just

The political discomfort with acknowledging heterosexual anal sex has led to a vicious circle of abdication and ignorance⁴⁸; by letting themselves be led by dominant social proscriptions around appropriate heterosexual behaviour, scientists have avoided the rectum as an area of research and thus, as Chris originally justifies, there is an extremely limited knowledge base in the scientific arena.

Scientific, political and technological co-production

I am trying to define in what way, to what extent, to what level discourses, and particularly scientific discourses, can be objects of a political practice, and in what system of dependency they can be in relation to it. (Foucault 1978: 23)

I have outlined above the way in which social and scientific discourses about women, men and HIV came together to gender the technology of microbicides. The relationship between science and politics, in its most literal sense, should not be overlooked or underestimated in terms of the trajectory of this development. This is particularly the case because the pharmaceutical industry had shown no interest in microbicides, meaning that funding was dependent on the public and charitable sectors. As Weber et al noted in 2005, “microbicide research has attracted considerable political attention because of the urgency of the HIV epidemic, the plight of vulnerable women in high-incidence regions, and the delays in progress towards an HIV vaccine” (Weber et al. 2005: 395). Political involvement was essential in financial terms, but was not merely monetary; the UK political landscape of the late 1990s also contributed to the evolution of microbicides as a woman-controlled prevention technology.

been replaced by Dennis Hastert, who wasn't any better; we had just introduced the Microbicide Development Act into Congress in the first time in March of 2000 and so lots of people were saying, “for God's sake, shut up!” You know, if you start talking about rectal microbicides, the far right is going to jump on that and we will never get any funding for microbicides research” (IRMA/Global Campaign for Microbicides joint Teleconference 2009).

⁴⁸ I here borrow Rabeharisoa and Callon's phrase, which they use to describe the way in which little-known diseases, such as muscular dystrophy, suffer from medical lack of interest: “when a disease is unknown the professionals turn away from it because it highlights their powerlessness. This disinterest, in turn, maintains the state of ignorance because it paralyses all efforts at carrying out research on these diseases” (Rabeharisoa and Callon 2006).

The UK government was involved in microbicides development from the early 1990s, when it provided money for laboratory screening of compounds and the programme of phase I studies conducted at Imperial College, London. Funding for these studies came through the concordat between DFID and the MRC, which first came into effect in 1992, and continues to contribute approximately £4 million annually to health research in developing countries. Of this relationship, MRC states: “our partnership with DfID strengthens the “research pipeline,” delivering products and informing health policies and practice” (Medical Research Council 2009). The elements of “delivering” and “informing” are both clearly visible in DFID’s support of microbicide development, which was cemented under the leadership of Clare Short, Secretary of state for international development from 1997 to 2003.

The role of advocacy in securing government money for HIV prevention research was key. Initially, AIDS advocacy had centered on treatment and was driven to a large extent by gay men and gay men’s organizations in the West, which then developed into an advocacy movement around access and distribution. In the early 1990s there was little advocacy in the West around prevention for the developing world. However, in 1996, the International AIDS Vaccine Initiative, IAVI, was set up and drove forward a very clear and very aggressive advocacy agenda at government level, targeted mostly at European governments⁴⁹. According to Harry, *“Seth Berkley, who set it up, was very good in that regard and he went around all the governments and raised this level of expectation that European governments should be investing in public-private partnerships with a view to investing in a science base and then move towards prevention technology, new prevention technology in Africa”*. Through IAVI’s charismatic approach, ‘New Prevention Technologies’ became the thing to invest in, and it is easy to see how the joint concepts of scientific progress and modernity appealed to funders. DFID initially invested £25 million in IAVI and senior researchers working on microbicides in the UK saw the potential of this precedent. Firstly, DFID was persuaded that it was legitimate to spend development money on research if it had a clear clinical outcome to it; and secondly, by giving a large sum to one organization,

⁴⁹ For a detailed analysis of IAVI’s advocacy and communication strategy, see Chataway & Smith, who note that IAVI “put the possibility of an HIV/AIDS vaccine, and awareness of the need for very considerable investment, on the agenda of every development agency in rich countries” (Chataway and Smith 2005: 9).

they could satisfy their (real or supposed) obligations to AIDS prevention research. As Kate, one of the clinical PIs, remarked, *“they liked the idea of investing in new technology, they liked the idea of giving it all to IAVI in a big sum, it sort of satisfied that kind of “we’ve given X million pounds to AIDS research””*.

The appeal of new technologies and the convenience of large research investments was not enough to secure government funding for microbicides. As mentioned above, in comparison to vaccines, microbicides were considered unscientific, and their appeal therefore had to rest on the additional dimension of women’s empowerment. Under the first Blair government, with its anti-poverty drive, DFID had benefitted substantially from the spending round; the then secretary of state for international development, Clare Short, was clear about where the money should be spent: “Women bear the brunt of poverty, but they also hold the key to its eradication” (Commons Hansard Written Answers, Wednesday 8 Dec 1999, Column: 575W). Senior researchers in the Microbicides Development Programme were acutely aware of these women-focused interests at government level:

I think she was looking for something which pulled together the pro-poverty line which she was addressing with something that was very clearly for women’s health, targeted at improving women’s health and decreasing women’s vulnerability and, um, and she wanted DFID to do something. (Harry)

However, It was not only that DFID was pushing through a pro-poverty agenda linked to women’s health, but that Clare Short herself was passionate about women’s empowerment; when I asked Harry how important to DFID the element of advancing women’s status in Africa was in respect of microbicides, he replied:

...it absolutely fitted in with their agenda about their priorities as of ‘99/2000 as to how to address issues of poverty and, um, so, as I say, because, I think, of the personality of Clare Short, it was a very woman-focused, um, outlook which they took then around women’s education and women’s health. (Emphasis added)

This view was reiterated by numerous investigators, for example Chris, “...*you know, because of the vulnerable nature of women, I mean Clare Short was quite a leftie really, so this was all very appealing to her*”. The opportunity to appeal to this interest was not lost. However, highlighting the specificity of this socio-political context, Ellen contrasted the European and American settings in terms of the appeal of microbicides: “*In Europe...you talk to European donors...and you can use the empowerment argument and that resonates fine. You talk to certain people in more conservative settings and, you know, they’re not so sure they want their women empowered*”. Within the US context, she said, the female-gendered dimension of microbicides had not always been to advocates’ advantage: “*I do think that...part of the lack of support and the constant resistance and dismissal of this field is something to do with gender.*” In the UK, it was precisely the gender element that held appeal.

As described above, from a biotech perspective, microbicides became commercially interesting when powerlessness was transposed into a medicalised need with a pharmaceutical solution. In terms of gaining political support and funding, it became advantageous to package or commodify women’s empowerment in the form of a biomedical solution. Minutes from House of Commons debates at this time reveal a strong rhetoric amongst politicians and civil servants around women’s lack of control over their destinies in developing countries and the need to give them power. This ties in closely with advocacy materials proclaiming slogans such as “putting power in women’s hands”, words that quickly found their way into media discussions of HIV prevention. Researchers took advantage of this favourable political climate; several key informants were unabashed in admitting that women’s empowerment was a “selling point” for the science:

Chris: ...there was a window of opportunity, which we were lucky to....we were in the right place at the right time and we had the right presentation and it all went well.

CM: Did that have anything to do with the growing advocacy movement around women-controlled technologies?

Chris: Yes, it was always...that’s right, yeah, that women had lack of opportunities to control...that was our selling point from the outset, yeah, that

this could be a female-controlled intervention that would challenge the gender politics if you want to put it that way, yeah. Give women some power over their own sexual relationships.

CM: So would you say that the concept of a microbicide was seen as empowerment per se, or is that a bit too simplistic?

Chris: Yeah, no, I think that's not too simplistic. (Emphasis added)

Although many of the senior researchers in MDP had come to microbicides through an interest in the scientific problem, and their priority was to show efficacy, the need to capitalise on DFID's poverty agenda, spearheaded by Clare Short, led to further propagation of the empowerment discourse and further gendering of the technology.

Summary

What are microbicides? At the start of this chapter, I referred to microbicides as a given and as a tool for women's empowerment; it should now be clear that it is no more obvious that they are 'an HIV-prevention method specifically for women' than that they could have been (and still could be) 'an HIV-prevention method specifically for men'. Essentialists (and among them many scientists) would view PRO 2000's technical attributes as deriving from internal characteristics, themselves resulting from a chain of scientific events – either the direct application of scientific method or linear extrapolation from previous technologies. However, in line with anti-essentialist approaches, I have shown that PRO 2000's 'innate' capacities are not merely the result of scientific method, but derived from the social circumstances of its production. In other words, it is socially constituted, embodying the interests and politics of the parties involved in its development.

PRO 2000 was initially conceived of as a treatment for HIV positive gay men, and it was at least partly through the changing global discourse on HIV that it came to be developed as a preventive tool for HIV-negative heterosexual women. In spite of the stabilisation of the user group, the fact remains that biologically, PRO 2000 has the potential to protect men, and it is only by silencing discussion of bi-directionality in

scientific publications and meetings that the interpretative flexibility of the artefact has been foreclosed. Although microbicides are now synonymous with women's empowerment, this too is not a natural function of the technology. I have discussed above how a jigsaw of agendas came together to bring PRO 2000 to the point of clinical testing. Scientists in the vaccine world had suffered a barrage of disappointments, with no discovery in sight; for some of these scientists, microbicides posed an achievable alternative, but one that was so technologically simple relative to vaccines that it became necessary to promote the concept in ways other than its scientific merits. Women's empowerment had been brought centre-stage by the International Conference on Population and Development in 1994 and women's health advocates started publishing more prolifically on a joint solution to women's powerlessness and HIV in the same year. The international attention to women-controlled technologies attracted the interest of Procept, a small pharmaceutical company with a molecule to commercialise; women's empowerment was not only highly marketable, but also came highly subsidised with government funds. For the UK government, PRO 2000 fitted their agenda on poverty, and held strong appeal for the secretary of state for international development, who had a special interest in advancing women's causes.

At stake in the development of microbicides is the very production of gender, which potentially reinforces women's inequality vis-à-vis men. Previous analyses of reproductive technologies have argued that such artefacts are inherently patriarchal (Rowland 1984; Corea 1987; Stanworth 1987; Burfoot 1990), and indeed a common argument for microbicides is that condoms are a male device, therefore women need their own female technology. However, eco-feminist accounts such as these draw on a problematic conceptualisation of gender based on the 'natural' differences between women and men. As Wajcman has rightly criticized:

The first thing that must be said is that the values being ascribed to women originate in the historical subordination of women...it is important to see how women came to value nurturance and how nurturance, associated with motherhood, came to be culturally defined as feminine within male-dominated culture....Secondly, the idea of "nature" is itself culturally constructed.

Conceptions of the “natural” have changed radically throughout human history.
(Wajcman 1991: 9)

The ascription of female values to the woman-user of microbicides could not be more pertinent, given the widely-stated goal of empowering women. If, following Foucault, we understand subjects as produced through discursive and power relations (Foucault 1980b), then it becomes necessary to analyse how the category ‘woman’ is produced and regulated by the very networks of power through which *empowerment* is sought.

As presented above, those working not only in the political arena, but within science itself, mobilised a discourse of vulnerable, powerless women and powerful, malevolent men. Given the number of senior male scientists themselves working on PRO 2000, this may seem self-defeating; however, crucially, the user of PRO 2000 was initially conceived of as the African woman, in the face of her adversary, the African man. Thus the vilification of men did not construct all men as reprobate, but specifically ‘other’ men - those men in the ‘Third World’ who refused to use condoms with their partners. A highly Westernized concept of oppression was therefore mobilised as part of the stabilization of the technology, whilst gender inequality in Africa was attributed to a distinctly non-Western form of male behaviour. Thus, while women’s experience of subjugation was treated wholesale, men could no longer be taken as a unified and coherent category, and it is perhaps this fracture which led to the erasure of men from microbicides discourse.

Given that power is exercised discursively through the production of subjects, it is ironic that microbicides are often discussed as ‘giving women power’. As I have indicated above, what is important to ask is not who has power and who does not, but how is power exercised through the interplay of discourses. Rather than trying to understand power as a general concept that can be given by one person to another, as advocates and researchers have implied, it is instead instructive to examine the techniques which enable the exercise of power and the production of knowledge.
Foucault:

Power must be analysed as something which circulates, or rather as something which only functions in the form of a chain. It is never localised here or there, never in anybody's hands, never appropriated as a commodity or piece of wealth. Power is employed and exercised through a net-like organisation. And not only do individuals circulate between its threads; they are always in the position of simultaneously undergoing and exercising this power. In other words, individuals are the vehicles of power, not its point of application. (Foucault 1980c: 98)

The 'net-like organisation' through which power is exercised extends through the social worlds of science and politics, with no discontinuity between, as Latour and Woolgar put it, the "controversies in daily life and those occurring in the laboratory" (Latour and Woolgar 1986: 281). Scientists' own discourse around women and men, as analysed above, makes this quite clear.

If we take both technology and gender to be discursively constituted, can we legitimately claim that microbicides are a gendered technology, and further still, can we claim that this 'gendering' is responsible for certain effects of the technology? On the first point I would argue that microbicides are indeed gendered, but that since gender itself is a discursively produced category open to constant re-contestation, this descriptor does not denote a necessarily enduring identity. To date, the gendering of the technology has been a scientifically, politically and commercially driven process deemed necessary to secure development of the PRO 2000 molecule. The question to pursue in the future will be not whether the technology is male, female or neutral, but how it comes to be interpreted as such. Secondly, on the issue of effects, women's health advocates, like eco-feminists more generally, assume that because microbicides are a female technology, the result will be empowerment for women. However, as Grint and Woolgar suggest:

If what counts as feminine and masculine are cultural attributes, subject to challenge and change, then replacing masculine technologies with feminine technologies begs the question of what precisely (and *who decides* what precisely) is to count as feminine technology. Are all feminists the same?

Unless they are, changes to the technology will not resolve the problem of asymmetric control over the technology. (Grint and Woolgar 1995: 294)

Again, what is more significant are the effects of the development process, whereby the technology comes to be constituted as a product for the powerless female in the first place.

Ultimately, PRO 2000, the microbicide, exists only in and through our practices and discourse. We have seen that its properties do not pre-exist the user, but that through a global re-definition of the problem, both user and technology were together constructed. In the next chapter, I go on to discuss the planning and implementation of the MDP 301 trial and the evolving relationship between those defining the research programme and those being defined by it.

Chapter Five

Science in Action: The Microbicides Development Programme

No one, no thing, no class, no gender, can 'have power' unless a set of relations is constituted and held in place: a set of relations that distinguishes between this and that (distribution), and then goes on to regulate the relations between this and that...power, whatever form it may take, is recursively woven into the intricate dance that unites the social and the technical. (Law 1991: 18)

Law's reference to socio-technical relations as an intricate dance reminds us that neither society nor technology are static or given, but are in a constant interactional process of becoming. The previous chapter drew attention to the co-production of gender and technology in the emergence of the microbicide field. Key to the development of this field was the institution of clinical trials to test candidate microbicide products, such as PRO 2000 gel. Clinical trials – whether seen themselves as a technology, or as science in action – are part of the circuit of knowledge-power relations in which gender identities are produced. Recognising this, various writers have underscored the ways in which research practices can be implicated in reproducing systems of class, race and gender inequality, and how resultant knowledge is always discursively situated within specific relations of power (Kincheloe and McLaren 1994; Oakley 2000). In this chapter, I explore the knowledge-power relations at work in the institution of the Microbicides Development Programme (MDP) and its phase III trial to test PRO 2000 (MDP 301). I focus on two major axes of difference which were pivotal in structuring and shaping this trans-national network: firstly, the constitution of Northern versus Southern⁵⁰ researchers and secondly, gender.

⁵⁰Binka writes, "The term north-south is used to describe a pervasive geographical division whereby the north represents the richer countries of North America, Europe, Japan, Australia and New Zealand, and the south represents the poorer majority countries in Africa, Asia and Latin America" (Binka 2005: 207). As analytical categories, 'Northern' and 'Southern', or 'North' and 'South', are problematic, since they are commonly used as coherent and unified cultural categories when it is impossible to delineate who, what or when Northern and Southern refers to. This is a point that Moore has underscored in her discussion of 'the West' as a discursive space and "imagined category" (Moore 1994: 131-132). In the

Although a distinction exists between MDP and MDP 301, this distinction proved difficult to pin down analytically. At the time of this research, MDP 301 was the only major piece of work the programme was funded to undertake; in conversation and in some interviews, the two entities – the trial and the programme – were often referred to interchangeably, their identities symbiotically linked. Therefore, rather than try to analyse the separate production of each of these parts of the research, in the following analysis I have treated them together, tracing discursive power relations and subjection through the research as a whole.

Genesis stories

Harry: I think Adrian representing MRC had gone on a visit somewhere with DFID, I can't remember where, it might have been Zambia...there was some visit that Clare Short did...and I suspect it's one of these back of the aeroplane chats over a gin and tonic where the whole idea of this had come up.

Chris: From the outset DFID said that we couldn't possibly make decisions on our own and it's got to be academic, and we said absolutely, you know we don't want, we don't want to get any money without academic credentials, so...Harry then got involved and met various people, um, maybe did Harry and Kate go to meet Clare Short at one stage? Yah, it gradually sort of...it gathered momentum...DFID liked it because it was aimed at sub-Saharan Africa, that was what we were selling them.

Kate:...all the phase III expertise is very much here and Harry realised that...And so Dominic and I were pivotal in getting involved in it at that stage and saying, 'how could we put together this network in Africa, where would we go, where were the academics in Africa, who could put together a cohort and we would check incidence.' We had no idea; we knew there was no data...

context of MDP, 'the North' was used to refer predominantly to the UK and the US, and 'the South' to Africa.

These accounts of the early days of the Microbicides Development Programme by UK researchers speak of the period before a formal collaboration between Northern and Southern scientists was set up. Stories of scientific hob-nobbing with politicians over gin and tonics in the back of planes to the tropics may be just that – narratives that conveniently package a more complex set of circumstances and events. However, they are also redolent of a past era in which the UK decided what was best for Africa. The story of MDP's evolution in certain respects mirrors the evolution of international development discourse; in the late 1990s, when MDP was being set up, the focus in these discourses was on relief; in 2000, it was aid, moving to development in 2001 and between 2002 and 2004 to 'partnership' (World Bank). In October 2004, the House of Commons Select Committee on Science and Technology criticised DFID's lack of attention to capacity building in science, technology and innovation. The summary of the Thirteenth Report states:

The frailties in DFID's approach to science, technology and research have had a detrimental effect on the support that DFID provides to developing countries. There is now an urgent need for DFID to commit significant extra funds to capacity building of science and research systems in developing countries...(Select Committee on Science and Technology 2004)

DFID's response was to hire a Chief Scientist (Sir Gordon Conway) and to prepare a detailed strategy for supporting science, technology and innovation capacity building. It was into this policy environment that MDP 301, funded by DFID, was born.

Since the mid-1990s, partnership has become the watchword in initiatives for development between North and South (Gaillard 1994; Fowler 1998; NEPAD 2001; Jentsch and Pilley 2003; Smith 2005). Partnership is espoused not only by DFID but by many other international development agencies, and is embedded within the Millennium Development Goals⁵¹ (Johnson and Wilson 2006). In the protocol that was written for the MDP 301 trial, the following definition of the research programme was provided:

⁵¹ The eighth Millennium Development Goal is to "develop a global partnership for development". See <http://www.un.org/millenniumgoals/global.shtml>.

The Microbicides Development Programme (MDP) **is a partnership** set up to develop vaginal microbicides for the prevention of HIV transmission, funded by the UK Department for International Development through the UK Medical Research Council (MRC) and co-ordinated by the MRC Clinical Trials Unit (CTU) and Imperial College London. (MDP301 protocol version 1.3: 16; emphasis added)

Subsequently – approximately five years later, and in the advent of the results of the trial – the MDP website was updated and provided the following information:

The programme is in the forefront of north-south research partnerships in terms of the capacity it has built in Africa...and the degree to which it is African-led. Trial management is collegial⁵², with significant authority vested in the southern partners...MDP has built a vigorous multicultural and multidisciplinary research network...Years of working collegially have built cohesiveness, efficiency and mutual trust among the scientists, clinical staff, data managers, and other professionals and support staff comprising this African-European and pan-African clinical trial network...⁵³

Whilst this discourse of partnership can be seen cynically as a mere exercise in good public relations, I propose that it be analysed as part of the discursive domain of techno-scientific and social co-production. Latour has written that “two things are needed in order to build a black box: first it is necessary to *enrol* others so that they believe it, buy it and disseminate it across time and space; second, it is necessary to *control* them so that what they borrow and spread remains more or less the same” (Latour 1987: 121). Taking the Microbicides Development Programme as just such a black box, I explore below how collaborators were enrolled and controlled with a view to understanding not only the construction of one particular programme of scientific knowledge production, but how forms of difference, and their attendant power relations, intersected and were (re-)produced within it.

⁵² Collegial is defined as “of or characterized by the collective responsibility shared by each of a group of colleagues, with minimal supervision from above.” (Dictionary.com Unabridged, Random House, Inc. <http://dictionary.reference.com/browse/collegial>, accessed 21/11/09).

⁵³ <http://www.mdp.mrc.ac.uk/>, accessed 21/11/09. The MDP homepage contains 14 mentions of the word ‘partner’ or ‘partnership’, indicating the centrality of this concept to the institutional discourse.

The discursive production of partnership

In 2004, when the protocol was being written for the MDP 301 phase III trial of PRO 2000, there was no ‘proof of concept’⁵⁴ for microbicides and only a handful of trials had been conducted. Propounding a scientific discourse of high risk and uncertainty, senior investigators confided that “*no one really had a clue how to go about it*” (Harry) and “*I think it was all very vague in the beginning, this was all some crazy idea that nobody would do*” (Chris). The language of lack and uncertainty suffused accounts of taking PRO 2000 forward to clinical testing in Africa: no one knew how much it would cost to follow ten thousand women up for three years; there was no fixed answer as to what to do with the additional pathology that the trial uncovered in participants; and there were additional ethical questions such as what standard of care should be made available to those who were found HIV positive. UK scientists presented themselves as pioneers, the element of uncertainty dovetailing into that of celebrated scientific risk-taking; as Hackett notes, “we celebrate heroic accounts of scientists who take risks pursuing ideas that others think unlikely to succeed, and the rhetoric of science funding policy abounds with praise for high risk/high reward investments” (Hackett 2005: 805).

Senior UK researchers created accounts that quasi-mythologized the scale and gravitas of the undertaking, making reference to high-level meetings with UK politicians and the important work international delegations had conducted across the globe. The potentially rather mundane institution of bureaucratic structures to run the trial was framed in terms of delivering cutting edge scientific results at the highest national and international levels:

...at the sort of highest level, programme level, when we first got the award in 2001, um, Celia and I had lunch with Clare Short and she said very clearly, “you two are responsible for delivering this [chuckles] - go away and make sure that it works properly!” And um, so, you know, we took it quite seriously and set up the structures to protect us from being criticised. (Harry)

⁵⁴ Proof of concept provides clinical confirmation that an investigational product possesses a desired pharmacological effect in individuals with the condition of interest. In terms of vaginal microbicides, proof of concept studies are designed to ascertain whether the product is effective in preventing HIV infection in sero-negative women.

Harry and others I spoke to outlined various strategies that were mobilised to legitimate the programme and deflect potential problems, such as cementing academic credentials in the UK (primarily linking Imperial College with the Medical Research Council) and carefully building up a network of trusted partners in Africa. Although governance was implied in the exhortation to make sure that the trial ‘worked properly’, the ensuing discussion was of ‘partnership’.

According to Harry’s account, the choice of partners was calculated to offset the unknowns of the scientific process. In other words, the deficit in knowledge amongst UK researchers as to how to conduct such a large population-based trial in Africa was compensated for by choosing well-known Africa-based colleagues as partners. In this respect, it can be seen as capacity-building of the Northern partners, although this was never suggested by my informants. Harry was, in Latour’s terms, the central ‘entrepreneur,’ in that he enlisted allies from a range of locations and aligned agendas to meet a common programmatic goal.

Harry: I knew Site A because I’d set it up with [funding body], so we knew what their capacities were. Um, Jane, I knew, because I’d been at university with her many years earlier and so I knew what she was doing, and she was a natural person to approach. Dominic knew the Zambian crowd and um, er, he brought them on board. And then I think Celia brought Institute Alpha on board through Site B because she approached them originally through Phillip. And um, and I’d always planned to do vaccine work in Uganda but we’d also started the work in [place] with the Uganda group, so they were an obvious group. So that’s where the groups came from; a mixture of, you know, people you knew...

CM: So, sort of through existing networks?

Harry: People you knew or people, you know, friends of friends as it were. It was done, it was done like that, yes, it wasn’t a call or anything. And um, but nobody had done any population-based work, not one of those groups, no one really had a clue how to go about it. (Emphasis added)

As this extract demonstrates, friendship and familiarity compensated for a lack of knowledge, experience and expertise in this particular field of scientific development;

the extract also points to the continuity of the networks of social relationships within science with networks in society as a whole⁵⁵. By referring to these choices as “natural” and “obvious”, Harry naturalised and thereby legitimated the process of selection; Dominic used a similar mechanism, describing both sites C and D as “*a logical group to work with*” and site B as “*a natural, a good partner to work with*” (emphasis added). In line with Max Weber’s types of grounds on which claims to legitimacy can be based (rational, traditional, and charismatic grounds) (Weber 1978), senior researchers appealed to the (often institutional) logic of particular partners, long-standing pre-existing relationships, and the outstanding qualities of individual site leaders. The esemplastic banner of the “Microbicides Development Programme” formalised these friendships into a scientific network and gave them a corporate identity, obscuring the social accomplishment of the scientific programme.

It was crucial at the outset that the programme’s figureheads, to whom DFID had entrusted £40 million of tax payers’ money, establish the legitimacy of the programme and maintain authority over the collaborators. Although MDP was dynamic in constitution, for the most part it comprised a stable membership of academic partners and clinical sites. These included six phase III sites in four African countries, and a feasibility site in a fifth; five UK universities and a sixth in Spain; and numerous consultants, research council branches and hospitals. Most of the partner sites and institutions themselves consisted of many individuals, from senior academic professors to junior operational staff. In 2007, when I started fieldwork for this study, MDP comprised over forty staff in Europe and over 350 in Africa, with each clinical trial site employing an average of 63 staff (MRC/DFID Microbicides Development Programme, Fourth Annual Report). The sheer size and geographic dispersal of the programme’s members required leadership, unification and governance; as I discuss below, the partnership discourse was fundamental to achieving this, both by enrolling the collaborators and controlling them.

⁵⁵ I have paraphrased here from (Collins 1985: 165).

From sovereign power to governmentality: 'Partnership governance'⁵⁶

"It's a democratic organisation, MDP, and it represents, it arises out of its members"

(Chris)

'Partnership governance' has been used to describe a form of governance based on networks rather than hierarchies and on participatory democracy (Fairclough 2005). This idea builds on Foucault's development, in his later work, beyond technologies of domination (as was the focus, for example, in *Discipline and Punish*) to the concept of governmentality, which he used to describe the kinds of power exercised in the management of populations or groups of people (Foucault 1991). Foucault suggested that within liberal democracies, governance rested not upon quashing subjects' agency and forcing them into submission, but upon directing their agency in particular ways. Governmentality represented the nexus between technologies of domination and technologies of the self (Petersen and Bunton 1997), for, as Burchell observes, "government in general is understood as a way of acting to affect the way in which individuals *conduct themselves*" (Burchell 1996: 20)⁵⁷. Gallagher has argued that this notion of governmentality contains an important ambiguity:

On the one hand, those who exercise such power attempt to make those whom they are governing so effective at regulating their own conduct that they will ultimately have no need of any external supervising power. Persuading people to participate in their own subjection in this way can be seen as the most cunningly efficient mechanism of power, enabling those who govern to do so with the bare minimum of intervention. Yet equally it can be argued that the ability to subject oneself to a set of behavioural principles – in Foucault's terms, an ethics of the self – is in fact the very basis of autonomy. In other words, by developing human beings' ability to govern themselves, governmental power

⁵⁶ I do not wish to imply a simple chronology here from sovereignty to governmentality, but rather movement around systems of power; as Foucault noted, "we need to see things not in terms of the replacement of a society of sovereignty by a disciplinary society and the subsequent replacement of a disciplinary society by a society of government; in reality one has a triangle, sovereignty-discipline-government..." (Foucault 1991: 102).

⁵⁷ According to Foucault's well known maxim, government is the 'conduct of conduct' (Rose 1999: 3).

actually ends up equipping those humans to become independent agents, no longer beholden to externally imposed systems of rules (Gallagher 2006).

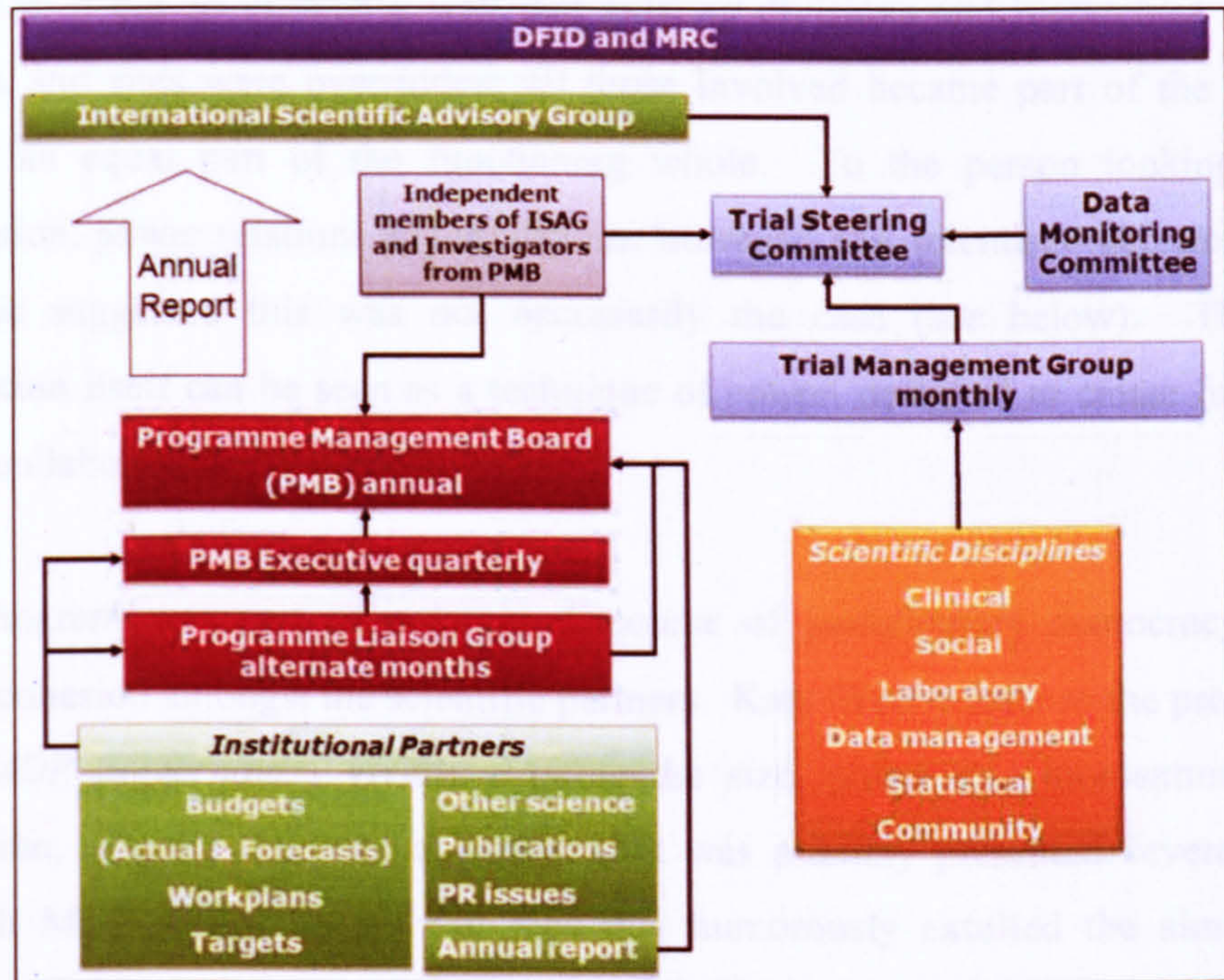
That subjects are not simply subjected to governance but are required to participate is a point that Rose has previously made in his analyses of governmentality (Rose 1992; Rose 1999).

Partnership governance – as an example of Foucault’s governmentality – was key in creating the cohesive and functional scientific network that came to be the Microbicides Development Programme. As Fairclough has noted, partnership governance has a significantly discursive character (Fairclough 2005)⁵⁸; In MDP, discourses of democracy and North-South partnership were ubiquitous, as some of the above quotes illustrate. In addition to formal contracts, such as the MDP Framework Collaboration Agreement, signed in January 2006, these discourses can be seen as a fundamental tool of governance, binding disparate international groups together and gaining consensus on future scientific protocols. The image below shows the MDP organogram, notable in two respects: firstly, in structure – almost entirely flat; and secondly, in name – ‘organogram’ from the Greek, literally signifying a drawing of the body⁵⁹. This representation of the disciplinary power structures that composed the programme was shared with collaborators and trial staff on a regular basis, for example at training workshops and international meetings; it was disseminated by email, used in PowerPoint presentations and became a staple point of reference in discussions of participation, communication and governance. It was also made public on the MDP website (<http://www.mdp.mrc.ac.uk/govern.html>).

⁵⁸ Rose has also argued that “it is possible to govern only within a certain regime of intelligibility – to govern is to act under a certain description. Language is not secondary to government; it is constitutive of it. Language not only makes acts of government describable; it also makes them possible” (Rose 1999: 28).

⁵⁹ *Órganon*- implement, tool, bodily organ, musical instrument; *grámma* - something drawn.

Figure 2: Microbicides Development Programme Organogram



It is difficult to identify any hierarchy in the representation, not least because the representation includes a mixture of human and non-human elements, for example 'Budgets, Workplans, Targets' and 'Independent members of ISAG and Investigators from PMB'. The symbolic function of the arrow lines is ambiguous: do these refer to the direction of reporting and accountability; do they denote group composition; do they indicate lines of communication; or a mixture of all of the above? 'Scientific Disciplines' are given independent status, but it's not clear how they are either linked or divorced from every other aspect of the programme. There is no peak or gradient, as there would be with a traditional triangular structure; rather, arrow lines coalesce in latitudinal hubs to the left and right of the diagram. In short, the image represents visually the 'collegiality' to which the MDP professedly aspired (see quotation from the MDP website above).

As Fairclough, again, has noted, "there is continuity between partnership as a mode of governance and partnership as a way of working" (Fairclough 2005: 7). In accordance with this observation, the widely disseminated image above constructed a collective

identity that unified the plurality of groups and individuals involved in the programme, both for work and governance; in Latour's terms, it both enrolled and controlled them. Furthermore, it did so in such a way that existing divisions and hierarchies between disciplines and sites were overridden; all those involved became part of the body of MDP, all an equal part of the functioning whole. To the person looking at the representation, power relations appear diffuse; however, UK scientists' accounts of the programme suggested this was not necessarily the case (see below). Thus, the representation itself can be seen as a technique of power, designed to create functional scientific collaborators.

The organogram was part of a larger discourse of participatory democracy which produced cohesion amongst the scientific partners. Kate liked to refer to the programme as "*the MDP juggernaut*", vividly evoking the size, power and momentum of the collaboration. Again, this was an image that was publicly presented several times, along with MDP songs, poems and raps that humorously extolled the aims of the programme and a shared commitment to making the trial work (for example the MDP training video for new staff members contained two raps – one on team roles, and the other an "Ode to GCP"). These entertaining devices were mobilised at site training and monitoring visits and can be seen as an efficient means to promote 'government through freedom'⁶⁰ (songs and raps are not seen as work, supervision or disciplining, but as a fun distraction from these). They provided a forum for group participation and inclusion of all cadres of staff, without the prospect of debate and conflict (which ideally characterise democracy).

Uniting the partners around a common protocol was essential to moving the programme forwards to undertake its first phase III trial. As May has noted, the symbolic capital of the clinical trial arises in part from the purity of the design and associated scientific rigour; the randomised controlled trial is the touchstone of clinical epidemiology, and the standard against which other research and reputations are measured (May 2006)⁶¹. As such, the design of the trial, codified in the protocol, had both to meet the demands

⁶⁰ Rose: "...when it comes to governing human beings, to govern is to presuppose the freedom of the governed" (Rose 1990: 4).

⁶¹ Or to borrow Collins' terminology (which he uses to describe the work of core-sets), protocols reflect the "transubstantiation of social contingency into methodological propriety" (Collins 1985: 145).

of scientific peer review and unite the sites around a common methodological undertaking. During the Feasibility studies for the trial, the sites were given a relatively free reign, provided information on key aspects, such as HIV incidence, was generated. The phase III trial itself, however, had to be standardised and attention to local context minimised. As Dominic noted, *“there’s a fairly defined structure, and so it’s really populating the different sections of that protocol. And protocols...often run into fifty to a hundred pages or more, you know, because they’ve got to deal with all sorts of issues of how you handle serious adverse events and so on. So it’s very clear to the people running the study on the ground just what they’ve got to do in different circumstances.”*

The elements of central standardisation and defining structures are clear from Dominic’s remarks. However, many of the UK scientists I interviewed who had led the initiative emphasised how democratic the process of protocol development had been. The discourse of democracy and partnership in creating the protocol was deeply embedded in relations between the centre and the sites and was a commonly noted feature of the trial outside the organisation itself. Accounts from my key informants on the details of the process revealed a certain tension between democratic participation and top-down control. For example, Kate called the development of the 301 protocol *“a very participatory exercise”*, but the way she described the process belied the ultimately autocratic approach to writing it:

*...so we sent the topic out⁶², the sites then sent a response back, we collated the response, sometimes that meant creating a table, sometimes it just meant, you know, summarising key points for discussion in an agenda, and then we had a conference call, and then we resolved things on the conference call. And some conference calls were very non-participatory, so for example, **topic 2, which was the design...it was non-participatory, definitely, nobody had an opinion.** Once Dominic and Phillip had said, what they, you know, I think Dominic managed that thing and put that document out and then Phillip must have done the next one, ‘cause they did 1, 2, 3, and then I did all the rest of them I think after that...I mean there wasn’t much anyone really had to say about, about, I*

⁶² Seven topics were sent out in total and discussed via teleconference.

mean, it's a randomised controlled trial [laughs] in women [laughs]! (Emphasis added)

Two points are worth noting in this account. Firstly, Kate describes the mechanisms through which controversies were closed and scientific consensus reached: the UK scientists sent proposals out to the sites and set the agenda for their discussion on teleconferences, acting as the scientific gatekeepers (or in actor-network terms, an obligatory point of passage). Secondly, she depicts the conference calls, around *the design* of the trial as non-participatory. Whereas “*there was lots to say about*” the behavioural aspects of the study (i.e. the *social science*), the design was a foregone conclusion. That “*nobody had an opinion*” about it shows the extent to which the randomised controlled trial itself is a stabilised construct and therefore able to act as a closure mechanism. Dominic was more explicit about the limitations to participatory democracy, underscoring that the key task of writing the scientific protocol was done in London. According to his account, the opportunity for the Southern partners to comment was constricted both by the foreclosure of controversies in the written protocol format, and reticence about ‘appropriateness’:

...we did have a number of discussion groups around topics relevant to the study design, where by teleconferencing, we brought people in to address the issues... And so it was a democratic process in that sense. When it came to actually the writing of it, I think it's probably fair to say however that almost all of it was done in London and drafts were sent to Africa for people to comment on. But I always think it's harder for them to suddenly receive a fifty to one hundred page document to comment on than if they're sort of seeing earlier stages of the document and to be able to comment, you know. And there's a sense, too, that if they're not too familiar with it, that er, they may be... a little bit shy of making comments, in the sense that whether their comments may or may not be appropriate, erm. But it was, yes, but there was some democratic element to it, but perhaps not as much as there could have been.

Dominic's enigmatic remark about the appropriateness of comments from the Southern sites suggests an unequal knowledge relationship between partners that led to the self-

censoring of those in Africa. Nonetheless, through the provision of an opportunity to participate, a liberal-democratic form of governance was established, with the sites 'participating' in their own subjection.

Given Dominic's apparent ambivalence about this format of North-South protocol development, I asked if the process would be any different next time round. He replied:

I think it would be very similar, erm, I would like to think there might be one way it could be done, would be that you might have a... a week's workshop in an African site at which you brought together the potential African people to sort of sit and sort of brainstorm over that at an early stage, maybe an earlier stage than we've done in the past. Having said that, of course, the germ of the idea of quite what your hypothesis is going to be and what, how you're best going to test it, that almost certainly has to come - it comes from a small group of people in the first place who, er...will often be coming from the same people who perhaps designed earlier studies. But there's nothing to say that it couldn't come from, that the starting ideas couldn't come from somebody in the South as well.

In this extract, Dominic signals the replication of expertise as a Northern prerogative. Whilst he proposes the possibility of shifting the locus of scientific leadership to the Southern partners, this suggestion is undercut by hesitancy. His reference to the "small group of people" who have "the germ of the idea", who decide the hypothesis and its experimental testing, resonates with Collins' concept of the core-set in science (Collins 1981; Collins 1985). The core-set is the group of scientists who are involved in the resolution of scientific controversies and fact-making⁶³. That the process of protocol design and decision-making would be "very similar" for future studies and would "almost certainly" come from within the same group of Northern scientists suggests the way in which scientific expertise can be retained as the preserve of Northern partners while discourses of partnership and capacity-building sustain a collegial scientific network.

⁶³ Note: although some of my UK key informants were in the core-set of the microbicides field, I have not undertaken a core-set analysis, which would include scientists from a much wider range of countries.

A tale of two technologies? The differential use of gender to enrol allies

Every time an inside/outside division is built, we should follow the two sides simultaneously....(Latour 1987: 176)

Since I was interested not only in the relationships around the development of the protocol, but also the relationships the protocol itself projected into the trial, I asked my key informants about how gender had been conceptualised and incorporated into the document. At the time I conducted the interviews, I had not made a distinction between 'the protocol' and 'the trial', having been successfully enrolled myself into the MDP black box. However, Dominic inadvertently brought this division to my attention:

CM: I've been raising the extent to which men are involved or detailed in the protocol, but lots of people who I've spoken to say, "well a) what's the point and b) it'd be far too costly" ...

Dominic: Do you mean... Oh, you mean involved in the trial, you mean in the trial not in the protocol? When you say in the protocol do you mean...?

It was only after the interview that I noticed this inside/outside division between the two. From a 'protocol-perspective', the UK scientists were all uniformly confused when asked about how gender had been considered. The bottom line was that it had hardly been considered at all during the writing of the protocol, and where it was considered, this was in relation to the 'soft' side of the science, that is, the social science:

CM: And did gender come up as a topic for discussion during that phase of...

Kate: [Interrupting] No. Well, I mean yes and no, but, so,...so um.....errrr, I mean obviously we, we um,...errrr, oooh, now I can't remember in that so, at what stage we would have....trying to think where, you know, where, where we got, sort of, um, errrr, at what point we decided to develop the social science in the way it developed with focus group discussions with men and enrolling a sub-group of male partners, um, I mean that was always there. I can't actually remember that being discussed but I guess it must have been discussed... um...I

mean it must have been there rubbing along in the background of several topics I would imagine, but I don't specifically remember. We certainly never made it a single topic.

Kate illuminated why this was the case:

It's still going to be a randomized controlled trial, with a placebo, there are gonna be the same targets you're chasing, it doesn't matter that it's female, none of that makes any difference. And the only difference is that you only want to recruit women...with some, you know, due diligence to the men.

Speaking of men enrolled as part of a couple cohort at one of the sites, Harry also commented:

There was no scientific advantage in (recruiting the men)... no, they were just another route to getting a population of women at risk of HIV where the risk, you know, was substantially great such that you could power a trial...

The design of the randomised controlled trial was presented as so conclusive in providing robust scientific answers about drug effectiveness that gender was irrelevant. 'Gender relations' were addressed in a token way by including some in-depth interviews and focus group discussions with men into the social science part of the protocol, but beyond that, the RCT and its de-contextualising logic prevailed. As Mort and colleagues have underscored in their work on telemedicine, "local innovations have no place in trial methodologies: indeed, they undermine the very notion of a trial" (Mort et al. 2004: 120). This is a point that May also makes when he writes that "clinical trials are founded on denying interpretative flexibility in practice to those working within them because they rely on the imposition of a rigorous trial protocol on everyday practice and thus the standardisation of clinical practice" (May 2006: 525). In order for the broader scientific community to be enrolled into *the science*, it had to be seen to be pure and divested of social contingencies such as gender. The protocol was the

technology through which methodological propriety was established and social contingencies erased⁶⁴.

However, as Dominic indicated, the protocol was not the same thing as the trial. It was a technology for scientific fact-making and enrolment of members of the core-set, but it was not a technology for enrolling other interest groups, such as the funder or the extensive cadre of junior researchers required to carry out the work of the trial. For this, a different tool was required, addressing a different set of interests; as Latour has noted:

The first and easiest way to find people who will immediately...invest in the project...is to tailor the object in such a way that it caters to these people's explicit interests. As the name 'inter-esse' indicates, 'interests' are what lie in between actors and their goals... (Latour 1987: 108-109)

The tool in question was 'capacity-building', which was high on the agendas of both DFID and the Southern partners who would be implementing the protocol.

Capacity building: Feminizing the science

"Capacity building of science and research systems in developing countries" was of key interest to DFID, and as Harry told me, was in some ways seen as the uppermost concern, in contrast to the scientific priority of the programme's initiators:

I think the idea that this was a trial where you didn't know the answer was not originally part of DFID's thinking [chuckles]...I genuinely think it didn't occur to them at the outset that this was an unlicensed investigational product. I think

⁶⁴ In designating the protocol as a technology in this way, I follow May, who, in a study of protocol development for telemedicine proposes that "the protocol itself was a kind of technology: a way of constructing *design* and *practice*..." (May and Ellis 2001: 1000). Furthermore, the protocol might be seen as what Rose has referred to as a 'technology of government': "A technology of government...is an assemblage of forms of practical knowledge, with modes of perception, practices of calculation, vocabularies, types of authority, forms of judgement...human capacities, non-human objects and devices, inscription techniques and so forth, traversed and transacted by aspirations to achieve certain outcomes in terms of the conduct of the governed" (Rose 1999: 52).

they thought of it as an intervention...It took quite a while for the penny to sink in that it might not work.

While the rationale for microbicide development was predicated on the need for women's empowerment, as outlined in the previous chapter, the empowerment discourse served additional purposes within the MDP: to enlist the cooperation of the partners and to immunise against the possible failure of the pharmaceutical product. In other words, even if the 'science' failed because the drug was found not to be effective in preventing HIV, there would still have been a 'social' success in newly empowered African scientists. During the course of the trial – and notably, shortly after one arm of the intervention had to be stopped prematurely⁶⁵ – the capacity building discourse started to frame the way the UK scientists also described the trial. Harry:

*It would be hard not to see that if you do an intervention of this scale and duration in these populations, then, you know, you are quite clearly **the intervention itself**, irrespective of the gel and the compound within the gel. We'll change women's lives and the lives of people and of their partners and of their communities by, by the premise of being involved in the study. (Emphasis respondent's own)*

In a sense the capacity building and empowerment discourses were conflated so that not only would the gel empower women (trial participants), but the trial would build women (scientists') capacity. As such, even if the gel were not scientifically shown to be effective, the money DFID invested in the programme could still be said to have been well spent.

The combined women's empowerment/capacity building discourse permeated the MDP and was re-iterated by numerous scientists in both the UK and Zambia. It contributed to the ethos of the programme and although the sites had a mixed composition of male and female staff, the feeling was that this was a 'female' programme. Dylan:

⁶⁵ In February 2008, the 2% PRO 2000 arm of the trial was discontinued following recommendations from the Independent Data Monitoring Committee (IDMC). This was seen as a major blow to the trial and raised the prospect of a negative result for the product. My interview with Harry took place in the same month, shortly after this announcement.

I think the research process has a much more powerful effect than just the introduction of some product. And that also applies not only directly to the participant women, but to the researchers themselves. I mean, in these sorts of studies, most of the research team is women, a lot of the doctors are women, a lot of the interviewers are women, they also move up in the status hierarchy compared to men...I mean programmes like this get set up like that, you recruit, you automatically recruit women because you're gonna be working with women. So you end up having a sort of female, female team, which I think then impacts on the communities, 'cause they see all these empowered women rushing around with stethoscopes and tape recorders and...it's empowering in itself.

Dylan was clearly referring to the African scientists in this extract and not to the UK scientists. The construction of scientists along racialised and gendered axes was apparent in the discourses mobilised as part of 'capacity building'. Within MDP, 'scientists' and 'women' were often discussed as if they were mutually exclusive groups, with "women" used to refer either to the African trial participants specifically or to all disempowered African women in general. However, at times, the female African scientists also became the object of a discourse of empowerment associated with capacity building. That this same discourse was not mobilised to talk about the UK women working on the trial suggested that the lines of division between 'us' and 'them' ran along different faults: gender, location, discipline, career position, role. These translated into dichotomies such as male/female; developing world/industrialised world; PI/fieldworker; scientist/trial participant, which shaped interactions within the programme. As Winch has noted, "A man's [sic] social relations with his fellows are permeated with his ideas about reality. Indeed, 'permeated' is hardly a strong enough word: social relations are expressions of ideas about reality" (Winch 1958: 23).

Conforming to the empowerment-capacity building discourse, the staff I interviewed at the Zambian site discussed how MDP Zambia had transgressed normal patterns of gendered staffing, whereby men occupy the most senior positions and have ultimate responsibility for decision-making. In MDP Zambia, the principle investigator, project coordinator, project manager, senior clinician (sister site) and senior counsellor were all women; many of the other posts were also held by women, thus giving them a critical

mass. Crystal, a community mobiliser, encapsulated many of the ideas raised by others in the following description of how working on the programme had 'changed' her:

Working on this project has changed the staff members, including myself. Because what I have learnt in my past three years I think has really contributed to my wellbeing; I've been...there's been a huge capacity building in myself, even the day I will leave this project, there are a lot of things I have learnt, not only HIV-related, but a lot. Yah, this project has taught me how to work, how to meet targets, how to associate with fellow staff, how to (not) condone when somebody steps on your toe, you know, we are many, we are from different backgrounds. The project has taught me a lot...the experience that I've got at MDP is awesome and it will make me somebody one day. (Emphasis added)

The staff re-iterated the discourse of capacity building, as highlighted above, and indicated how the governing structures of the programme, such as working to the protocol, had *made them* who they were. Going back to Gallagher's point made earlier, in subjecting themselves to partnership governance and working to the programme's set of behavioural principles, female staff acquired an ethics of the self and thereby realised their own agency.

Any capacity building that took place did not take place in a value-free context, however, and the gendered nature of reported changes apparently created tensions amongst the staff. For example, some male employees were resentful about their minority position and critical of women occupying senior posts. Michael, one of the research assistants, was a case in point, expressing frustration at having to seek permission from female heads of section and at working as part of a predominantly female team. He was scathing about his female colleagues, claiming they gossiped, weren't straightforward, delayed work, were full of empty politics, and were all talk and no action. In his opinion, having more men on the team would have improved performance:

CM: So you think perhaps if there was a man in the senior job things would be more effective at the site generally?

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CM: So you think perhaps if there was a man in the senior job things would be more effective at the site generally?

Whereas inside MDP, he could joke around and make light with other staff members, in front of his wife he would need to be serious, act the boss, and be in control:

Last time when you were saying John's wife should apply - is he going to be free? Because he's free here to chat, he'll chat with this one and that one, then he goes home. But when the wife is around, he has to act like a real boss, walking majestically [laughs], not talking rubbish, just keeping himself as a married man. (Ben, MDP research assistant)

It was felt that because of the shift in gender relations amongst staff members, spouses would be unable to work at the site: "...here you can't work with your wife. You can't work with your husband here". Comments such as this suggested that a very particular set of gendered power relations was instituted at the site, which framed the knowledge-making process of the trial.

Capacity building: The co-production of Northern and Southern scientists

In addition to transgressing the normal gender hierarchy within the work place, staff in Zambia drew attention to ruptures in the hierarchical relationship between North and South. This was something that the UK scientists presented as a conscious part of the programme - to "empower the sites":

*We did try, as a matter of, of sort of philosophy, to try and make the sites as independent as possible within the trial and to **empower the sites** as it were, um, to...to feel that they were taking a role in leading the research rather than just being a cog in the wheel. And I think that's been quite successful. I think, so you know, if you go and visit any of the sites, you know people do feel ownership of it, over and beyond. (Harry, emphasis respondent's own)*

MDP was said by scientists in the UK and Zambia alike to be radical in devolving power from the central to the site level, for example in terms of data collection and

project management. I asked staff in Zambia how they felt about working at MDP and what they thought of its organisation.

In terms of MDP being a democratic organisation, staff members spoke of how this ethos had permeated their working practices, both amongst themselves locally and in relation to colleagues in the UK. A key aspect underlying this was the fact that the initial training for the study had emphasised the need for all members of staff – from the cleaners to the clinicians – to be conversant with the protocol. During initiation training visits by the UK researchers, all members of staff had been required to attend and were treated with equal respect; as any member of MDP at any site would have told you, the clinical PI knew everybody's name, no matter how lowly their position within the team. The ongoing working relationship between the coordinating and trial sites continued to remain focused on the principle of partnership; the associated values of respect and equality were what some respondents alluded to. For example, Ben, a research assistant:

Ben: Sometimes if you compare with what happens in government offices, it's not what's happening here.

CM: It's not?

Ben: No. In government offices there are really rules, there are real rules, whereby somebody who cleans, someone who is a cleaner or a receptionist, is supposed to give respect to people like us in the offices. A receptionist cannot just come in and (say) [in a silly female voice] "Hi Mr Ben", chatting, no. When she comes here it's real business. Real business. Like you can even say, [pointing to the dirty cups] "can you get these, take them into the kitchen" but here you can't do that, I have to carry them myself to the kitchen and take them back. Because we're just open, just free, everyone knows what they're supposed to do. (Ben, MDP research assistant)

Ben's observation about the difference in working style and discipline between MDP and government offices points to the programme's effective use of participatory democracy as a form of governance. Instead of answering to a sovereign power (embodied in "real rules"), the staff became self-regulating – "everyone knows what

they're supposed to do". This reportedly led the staff to feel free, again underscoring the freedom or agency of the governed under governmentality as a system of power. Although Ben's account of liberatory working practices at the research site refers to internal staff relations, we might speculate as to whether the values he alludes to contributed to the staff's interactions with women participating in the trial, women's experience of participating in the trial and their subsequent relations beyond the trial site.

In addition to within-site interactions, Marley, one of the social scientists, spoke at some length as to how the relationship between the trial site and the coordinating sites in the UK had impacted on staff members locally:

Marley: The design is very...empowering because as a site it gives you room to think, to deal with a problem, and then they come in to actually help or steer your thinking and then see what solution comes out...I think the design really helps with the aspect of devolution, if you like.

CM: Devolution?

Marley: Devolution, maybe devolving power.

CM: Explain what you mean by that.

Marley: Devolution is where you really give power to a local unit to actually make decisions. So in the MDP trial now, where there is - there's quite a lot of devolution of power to the sites. The sites, if they have problems - it's interesting the way you try to deal with them. You steer. They can say "there is this problem and that" and then the site identifies problems and tries to come up with an intervention and then see how they work. So there is that feedback and that's, I think, empowering, that devolution. And I've seen other designs, they are actually very centralised. They just enter everything you send, everything you send. And then people remain the way they were even before the trial started. And I can tell you what you have developed in most of these ladies and gentlemen are long time, long time scientists and community members, who actually put their skills together to be better trialists. (Marley, MDP social scientist)

Marley contrasted the design of MDP 301 with other international trials, many coordinated by US scientists, in which African trial sites 'harvest' data but have no ownership of them. Such centralised organizations were felt to be imperialistic and disempowering to local staff. In this respect, the collaborative nature of MDP and the discourse of partnership rather than central control was presented as a keenly felt and appreciated aspect of the programme:

*I'm part of the MDP team and to me, I would say it's a privilege. Zambians, we haven't been many other times **participating** in such kind. Mostly we just enjoy things coming from outside without, you know, **participating** in it, so being considered...really to **participate** in such a kind of trial, you know, I would say it's an honour. (Colin, MDP community mobiliser. Emphasis added.)*

In contrast to many other international (or so-called 'offshore'⁶⁶) HIV prevention trials, MDP was felt by several staff members to be creating scientists in situ, building expertise at the site of the research rather than annulling the possibility of it. The very strength of this was the soldering of social worlds, with those from the trial community acquiring the knowledge and skills to study their community themselves:

But the fact that I'm working in a trial and there is - in me, there are two people; there's the scientist, and then there's also a community member, because I grew up from here. And I think there's nothing better than that, because I have that satisfaction of saying, ok, as a scientist I'm really seeing how good science can be for the community. Then as a community member I can really see how science is making me become a better community member. So as an individual that has really brought in two dimensions. (Marley, MDP social scientist)

This trial-created discourse suggests the extent to which MDP successfully enrolled young African researchers from within their own (social) communities into the MDP (scientific) community. His reference to the double-sided face of the community-member/scientist points to the continuities between science and society and the

⁶⁶ See (Rosengarten and Michael 2009b)

constructed nature of the distinction between the two. The two, in a word, are co-produced.

So far it should be clear that both the Northern and Southern partners propounded a discourse of Southern capacity building and empowerment. However, there was no talk of Northern capacity building and empowerment, a pattern that has been observed in prior studies. For example, Jentsch and Pilley have identified “the assumption of Northern superiority, especially related to capacity building” as a problem within North-South health research partnerships (Jentsch and Pilley 2003: 1958); see also (Lewis 1998). Although it was only rarely stated that the expertise in MDP was located amongst the Northern partners, UK staff’s frequent comments about capacity building of the Southern partners implied that this was the case. For example, extolling the virtues of the programme, Gill, a UK consultant commented:

...you go to an MDP international meeting and you’ve got a completely different sense, you know, it’s very Southern...I wouldn’t say Southern-dominated, but you know, you just see capacity being built and you see these...oh I mean and you see how much capacity there already is, you know there are these fantastically bright, exciting, idealistic people involved in MDP all round the world.

Even though Gill acknowledges existing Southern capacity, she indicates that MDP is special because it is building the capacity of Southern partners. She goes on to say,

So whether or not PRO 2000 actually works, you know I think we’ll have built something in Africa that’s tremendously important that will cascade outwards...

The coincidental juxtaposition of ‘domination’ with capacity building in the first extract is telling about the role of partnership, and its corollary, capacity building, in the trial’s mode of governance.

In spite of the lack of public discourse about Northern capacity building, and in spite of the presumption of Northern expertise, there were numerous occasions on which UK

scientists indicated that they too had been produced as part of the trial. This related to scientific language, symbols and procedures, for example, Dylan: *“I was a bit puzzled about what a CRF was, I’d never heard about CRFs before and it only gradually dawned on me that it was a sort of questionnaire, it just had a fancy name”*⁶⁷. It related to the product being tested:

Patrick: I haven’t, you know, I’ve never even seen gel [laughter]!

CM: No, I don’t think lots of us have seen it; I haven’t seen it.

Patrick: [Laughter] five years down the line [laughter].

And it related more fundamentally to the nature of the intervention itself:

Harry: When we started, my wife was constantly saying to me, “You know, come on, you can’t just impose your idea of a Western solution on women in rural South Africa”, you know, where I had never been, I had no idea, never worked in Africa...but I was, you know, I was imposing a view of what a solution was completely externally from any appreciation locally.

Furthermore, whilst the women participating in the trial and the African scientific partners were said to be empowered by having to talk openly about sex during the research, there was an acknowledgement by Dylan that the same process was at work amongst the UK scientists:

The more you talk about sex the easier it becomes to talk about sex. It’s the same with the researchers. It’s only among people working on these sorts of studies that you can sit in the restaurant and have an hour long conversation about anal sex without anyone feeling even slightly uncomfortable [laughter].

The production of UK scientists occurred not only through internal discourses and routines, but took place in concert with the production of scientists in Zambia. A key component of this related to the social contingencies, such as gender relations, which had successfully enrolled the Southern partners into the programme, but had been

⁶⁷ A CRF is a Case Record Form, the standard tool used to collect clinical data in a trial.

largely erased from discussion of the scientific protocol itself. By the time I conducted my interviews, approximately two years after the trial had been up and running, UK scientists said they felt 'changed' by what they had seen and experienced. All of the senior UK researchers I spoke to visited the African sites during the course of the trial and saw the situation first hand. They were also constantly exposed to accounts of gendered inequalities at the sites through monthly teleconferences during which African researchers brought operational issues to the table. Kate described her own transformation in terms of gender awareness:

I think that's true, that the added value of the gender resonated more for DFID than it did for us. But I wouldn't say I feel that now, I don't feel that now, I'm, I'm, er, I'm...really...[sighing]...well, myself much more conscious of gender issues and you know, it's never been an issue for me, in my personal life, barely, um, anyway, um. So I guess I just...wasn't thinking about it. So I think it's quite an eye-opener to see how, how, um, disempowered women are in these settings by, you know, lack of education, lack of income, lack of independent income and just even lack of physical authority, you know, I think that's been an eye-opener for me, which sounds a bit...naive, ridiculous, whatever. I mean, of course, if I'd stopped to think about it I would have known it was like that, but I'd, I'd not stopped to think about it before and I think often you don't take it in until you actually see it in operation.

Although this confessional-style testimony may have been a product of my own interest in gender and was given in response to questions on gender considerations in the trial, Kate and others were sincere in their depictions of how the research had affected them on a personal level. Contrary to the neutral, objective, a-contextual discourse of clinical trials, she and others acknowledged the personal and social nature of the research, which led not only to the creation of new scientists in Africa, as discussed above, but to the *recreation* of scientists in the UK. Harry poignantly described how he felt about the programme – emotional – the antithesis of the rational, of which science is said to be made:

...it's also been a more emotional piece of work than one might have thought, um, you know, this is not a dry programme; this is hundreds of people who are really sort of quite passionately committed to it, plus the women. And when I go to the sites, you know, if you talk to the women in the sites, talk to the investigators and so on, I mean there's a real, there's quite a passion, quite a belief in all this, which is not like a dispassionate clinical trial, I mean this is... [lost for words]...um...So it's been interesting for me, 'cause as I say, I approached it in quite a dry and rather focused way and it's made, um...it's, it's, it's been far from that, it's been a very unusual programme. (Harry, emphasis respondent's own)

Unusual indeed is the reference to emotions and beliefs, which are not the stuff of 'science'.

Summary

In this chapter I have explored the creation of a knowledge-framework which was to form the basis of clinical testing of the candidate microbicide PRO 2000. The Microbicides Development Programme and its phase III trial, MDP301, provided the conditions for assessing the safety and efficacy of this new prevention technology and thereby contributing new knowledge in the field of HIV prevention. Returning to Law's proposition, "No one, no thing, no class, no gender, can 'have power' unless a set of relations is constituted and held in place" (Law 1991: 18). By tracing the enrolment of actors into MDP and into the MDP 301 protocol, I have shown how a set of relations was constituted between Northern and Southern researchers and have suggested the role of a gendered capacity-building discourse in holding these relations in place. Governance was achieved through the discursive production of participatory democracy and partnership, which granted agency to the 'partners' whilst maintaining control over them.

Collins has argued that "since order and knowledge are but two sides of the same coin, changing knowledge is changing order" (Collins 1985: vii). How large international

scientific collaborations are formed and mobilised, and how the trials they run are designed, arguably has a direct impact on the knowledge they produce. If order affects knowledge, which in turn affects order, then MDP can be said to have produced a potentially transformative circuit of gender and technology relations. This potential is explored further in the following chapters. Finally, to paraphrase Collins, the aim of this chapter has not been to reveal flaws in the MDP research process, but rather the artisanship of its construction. In the next chapter, I go on to explore the translation of the programme across geographic and cultural borders.

Chapter Six

Trial and Transformation: Gender and Technology in Zambia

Our society is not one of spectacle, but of surveillance; under the surface of images, one invests bodies in depth; behind the great abstraction of exchange, there continues the meticulous, concrete training of useful forces; the circuits of communication are the supports of an accumulation and a centralization of knowledge; the play of signs defines the anchorages of power; it is not that the beautiful totality of the individual is amputated, repressed, altered by our social order, it is rather that the individual is carefully fabricated within it, according to a whole technique of forces and bodies. (Foucault 1977: 217)

In this chapter I will examine the process of implementing the phase III clinical trial designed to test PRO 2000 in one of the six African trial sites: MDP Zambia. Precisely because MDP Zambia was set up as a new site in a research-naïve community, it provides the opportunity to explore how the apparatuses of power and knowledge relations embodied in the randomized controlled trial were re-produced independently of pre-existing research structures⁶⁸. In chapters four and five, I discussed the discursive production of gender-technology relations in the UK and international arenas; here, I describe the ongoing construction of both microbicides and gendered subjects through the clinical research process. Data for this chapter come primarily from fourteen in-depth interviews with MDP Zambia staff, conducted between March and June 2008. I also draw on two focus groups held with local men, as well as interviews with men, women and community members conducted in the same period.

Foucault's writings on power, knowledge and the body provide the analytical backdrop to this discussion, in particular the ideas expressed in *The Birth of the Clinic* (Foucault 1975) and *Discipline and Punish* (Foucault 1977). Foucault described power as a positive and productive force that is diffused through the social system in everyday

⁶⁸ Of the six MDP trial sites, MDP Zambia was the only one not to be instituted at a long-standing research centre, where established institutional systems and hierarchies were already deeply entrenched.

practices of normalisation. Medical discourse and practice is central to the constitution of bodies and subjectivities; the ‘clinical gaze’ of the health professional constructs the body and delineates the normal. As Armstrong has argued, “A body analysed for humours contains humours; a body analysed for organs and tissues is constituted by organs and tissues; a body analysed for psychosocial functioning is a psychosocial object” (Armstrong 1994: 25). By taking the clinical trial as an extension of the clinic, we can explore not only notions of surveillance and subjection but also acquiescence and/or resistance by trial participants and community members to the power of medical researchers⁶⁹. As intermediaries of the trial and the community, local MDP Zambia staff were in a pivotal position; below I explore their role in mediating the power techniques of both the international researchers and male partners of trial participants. In 1986 Latour and Woolgar described scientific activity as “a fierce fight to construct reality” (Latour and Woolgar 1986: 243); in the results that follow we can see MDP as the battleground for precisely such a fight.

Constructing the site: Clinical trials in Mazabuka, Zambia

The clinical trial site in Mazabuka, Zambia, was set up in 2002/3, specifically for the purposes of the Microbicides Development Programme. Prior to this time, no research site existed in the town or district and clinical trials were largely unheard of. In popular accounts of the site’s history among UK researchers, the idea of building a site in Mazabuka came from an existing collaboration between a senior UK scientist and a Zambian doctor working in Lusaka. The rationale given for choosing the town was that it was based around a large sugar plantation, which provided a stable population ideal for research. Mobility was much lower than in the capital and the population was well-documented, with residential areas already mapped out. According to the UK scientist in question, “*We thought by and large, you know, we couldn’t go wrong. It turned out it wasn’t quite so straightforward as all that*”.

⁶⁹ On clinical trials as an extension of the clinic, it is worth noting Fisher’s observation that “within the political, economic, and cultural contexts of neoliberalism, the offering of pharmaceutical clinical trials is positioned as adding another option for health care consumers. Because the majority of pharmaceutical studies are located in familiar context...the process of research is normalized, meaning that clinical trials become a routine part of the clinic” (Fisher 2009: 17).

Since clinical trials had not been conducted in Mazabuka prior to MDP, this type of research was not only new to the local community, but equally to the staff who were recruited to the project. My informants reported that even where drug trials were being carried out, many lay people 'did not understand' the experimental nature of the research⁷⁰. Discursive accounts produced within the trial construed MDP as a novel and exciting enterprise that was taking science beyond the hospital laboratory and into the community:

A clinical trial in Zambia was something people had never heard of. Even me, as a nurse, I had never heard of a clinical trial being carried out in Zambia...Like when government brought Coartem, which was believed to have been in phase II or phase III, government brought that Coartem without telling the people that in fact this drug is still on trial. And we hear there are even other anti-TB drugs, they will just come, they are tested, and shortly they phase out. And that's when you hear that, "oh, in fact, this drug was just on trial".
(Crystal, community mobiliser)

Many other trials that were being conducted in Zambia mostly were done inside hospitals, without even most of the people knowing that some of the drugs were being put on a trial. But this time around it has been done outside the hospital, independently, such that really people will be free to come and participate in it freely. (Colin, community mobiliser)

Furthermore, because microbicides themselves were a new concept, very few people had ever heard of them. Most of the staff I interviewed said they had not known what MDP or microbicides were when they came for their job interview, and that they had not even known how to pronounce the word. They presented the stabilisation of the research site as a steep learning curve, requiring them to get up to speed with research principles, such as those enshrined in Good Clinical Practice (GCP), as well as understand the protocol that had been sent from the UK. As Crystal describes:

⁷⁰ On the construction of experimentality in relation to the therapeutic within pharmaceutical clinical trials see (Petryna 2009).

Even when they gave us the protocol the first day we reported, we were told, "You read and understand the protocol". A lot of things were not making sense and every day [our supervisor] would sit with us, we'd have questions for him and he'd answer, until maybe, it took us two, three weeks, to start really getting what's the meaning of this study, what is involved, who is involved, and the like. (Crystal, community mobiliser. Emphasis respondent's own)

In the early stages of MDP, visits were made by the UK coordinating team to the Zambian site to help with staff training. A large part of this was training on the protocol and clinical procedures, ensuring consistency across the programme. Scientific discourse relays the need for multi-site clinical trials to be conducted according to strict protocols and standardised procedures, designed to guarantee the rigour and validity of clinical findings; local context is to be elided as far as possible. For those implementing the research on the ground, however, the trial is not conducted in a vacuum but in the real world, often the world they themselves have grown up in and are deeply enmeshed in. Whereas the protocol quickly became black-boxed in the UK and accorded the status of a sacred and immutable set of procedures, a lot of work had to be done at the site-level towards its stabilisation. Coordinating staff in Zambia, who were to train their staff in 'the protocol', described the challenge of being the conduit for new discourses that were being channelled in from outside the community.

John: As I got into the programme, well things became more complex, because I had to understand a lot of things from the clinical perspective, which is not my background.

CM: What sort of things?

John: Um, things to do with data capturing...the protocol itself, the procedures we were going to follow and the type of women we were going to recruit and why we're recruiting them. And I was now looking at that in terms of what we actually believe in, or the norm of this place.

CM: Tell me about that.

John: Basically, before MDP came into place, I mean things to do with HIV testing were really not something that you could talk about openly. And then when I looked at the CRFs or the Case Record Forms for data capture, they

were all issues to do with sex and it was more or less like bringing out the bedroom to the open. So those are some of the things that were a bit uncomfortable for me as we started the trial, because you really had to talk about bedroom issues in the outside world. (John, community mobiliser)

The joint taboos of HIV testing and talking about sex, which John mentioned, were both a pre-requisite for enrolment into the MDP trial. John and others discussed how stigmatised HIV testing was before the arrival of MDP in Mazabuka, reflecting a situation that has been documented widely in Africa as well as specifically in Zambia (Bond et al. 2002).

The institutional ‘incitement’ to speak about sex, and the power implied in the trial’s new regime of discourses, was not met with passive adoption. The open discussion of sexual matters – or ‘bedroom issues’ – was reported to go against traditional codes of decency, adding to the suspicion that AIDS was a result of Western immorality⁷¹. Translating the terms of the research not only into the vernacular, but also into something acceptable for the local community was key to enrolling actors into ‘the trial community’ and thereby establishing MDP in Mazabuka. In the process of trying to engage the community, the programme ran into several difficulties, these primarily being rumours that the research was Satanic and opposition by men in the community to their wives’ participation.

Resistance to techniques of power: Satanism and “male opposition”

Rumours about Satanism and witchcraft are common in relation to medical research in Africa (Geissler 2004; Geissler 2005; Geissler and Pool 2006). Geissler and Pool note that “medical research and the ‘trial communities’ it constitutes by linking scientists and subjects, institutions and funders...is one of the networks of global connections that has been particularly prolific in the generation of rumours” (Geissler and Pool 2006: 975).

⁷¹ Gausset records that the AIDS discourse of most rural Tonga in Zambia is the diametric opposite to that in the West, the former seeing Western profligacy as the root of disease spread, the latter blaming African cultural norms (Gausset 2001). I experienced this first hand when interviewing one key informant, who at the end of the interview confided how concerned he had been that (being a Westerner) I might raise indecent questions with him.

Popular concerns about blood stealing, Satanism and witchcraft have variously been interpreted in the historical and anthropological literature as forms of popular resistance; ignorance of medico-scientific research; and local responses to research ethics in the context of globalisation and unequal access to resources (Atieno Odhiambo 1974; Burke 1998; Campion-Vincent 2002).

Rumours that MDP was a Satanist organisation plagued the research from the start and were still circulating at the time I conducted my interviews five years after the site opened⁷². Local Zambian staff were the primary target of these rumours, aspects of which are consonant with Colson's description of witchcraft amongst the Gwembe Tonga: "In the 1990s the most feared witches are usually said to use...resources that obliterate the safeguard of distance and are associated with technology brought by Europeans...Despite this, the accused witch so far remains someone who operates within one's own immediate network" (Colson 2000: 341). Although Colson here refers to technology primarily in the sense of engineering or machinery, such as aeroplanes and guns, the parallels with new scientific technology, as embodied in the clinical trial site (for example microbicide gels and sophisticated laboratory equipment), should not be overlooked.

The most prevalent rumour circulating during the phase III trial was that MDP took people's blood and either used it for Satanic rituals or sold it on in South Africa or the UK. In other rumours, women who tested HIV negative were reportedly made to sleep with HIV-positive men when they came for clinic visits; MDP staff were said to drink women's blood; the drinks that MDP gave participants after taking their blood, branded with the slogan 'YESS', came from a supermarket believed to be Satanic and made people say yes, they were HIV-positive (even if they were negative); and the food MDP gave participants as they waited in the clinic was made out of chopped up babies it got from the Satanic supermarket:

Margaret: There's this Indian man, he's got shops and whatever, it's like he owns Mazabuka, so they said [MDP] negotiates with [his supermarket]...They

⁷² Mazabuka is considered something of a hot-spot for Satanism and witchcraft, as numerous newspaper articles attest to (see for example Anon 2005; Anon 2007).

bring nshima⁷³ sometimes with chicken. So with chicken, they say [MDP] connives with him, he sells babies to MDP.

CM: Babies?

Margaret: Babies, small, small babies, to MDP, of which those babies are cut and cooked and they come in the form of chicken. That's how come the chicken is not even tasty, you know? All those rumours. So when people talk about that, like especially men in their workplace, when they say, "MDP is Satanism", MDP this, MDP that, and then they will tell their women, "I don't want to see you going there, those are Satanists". Usually that's one thing that will make a man refuse. (Margaret, research assistant)

Whilst Margaret and a number of other respondents linked the rumours of Satanism to men's opposition to the programme, this was not universally the case, with some suggesting that the rumours came equally from men and women, and particularly from women who had been found ineligible to join the study. However, in focus groups with men from the community, participants directly confronted me about whether MDP was Satanist, questioning the organisation's motives, funding, and what was done with participants' blood. Some men admitted preventing their wives from coming to join the trial because it was Satanist, while others said they even feared to come to the trial site themselves for the focus group. It is therefore worth considering the broader context from which this response may have evolved. Common to the rumours was a link with money or wealth accumulation, blood, and foreign infiltration (e.g. blood was said to be sold in South Africa or the UK, and the 'Satanic' supermarket was owned by an Indian businessman⁷⁴).

In terms of the specific context of MDP, when it first opened on the Nakambala sugar estate in Mazabuka in 2003, it did so as a VCT centre. At this time, Zambia Sugar, on whose premises the MDP site was based, had recently been taken over by the Illovo Group of South Africa. As part of a publicity campaign for MDP, the new manager was

⁷³ *Nshima* is a thick porridge made from ground maize flour, which forms the staple food in Zambia.

⁷⁴ The association of blood-stealing with Indian businessmen has been a feature of *banyama* rumours in northern and eastern Zambia since the 1920s, however Colson reports that Gwembe villagers in Southern Province, where Mazabuka is located, only began to speak of *banyama* in the 1970s. She describes how "in the multi-ethnic towns of Zambia's Southern Province fear of body robbers led to riots and attacks on Indian storekeepers in early 1996" (Colson 2000: 340).

the first to go and get tested through VCT. However, male workers at Zambia Sugar reportedly took this as a sign that testing would be compulsory for employees in order to weed out those who were HIV positive from the workforce. As such, they feared for their jobs and shunned the programme. One community mobiliser who had gone door to door speaking to men told me that when they heard that MDP was primarily targeting women, they interpreted this as a strategy to identify them and their HIV status through their wives. At the same time, in April 2003 (a month after the MDP Feasibility study started in Mazabuka), Illovo was implementing changes to its pension scheme⁷⁵ and men feared that if they were found HIV positive and lost their jobs, they would not be able to access their pension money. Even in 2008, when I held focus groups with men, some reported the rumour that MDP was Satanist because it was using women as a means to undermine the men:

Facilitator: Did it bother you that MDP is looked at as an organisation for women?

R7: Yah, it bothered me, because how do you only test women when HIV can also affect a man?

R1: And that's one reason many people associated it with Satanism, because they know that women are weaker vessels [mumbled agreement from the others], it's very easy to convince them.

Other Rs: To convince them.

R1: When you convince a woman, it will be very easy for her again to convince the husband. So people said, "Oh, these people, they know the gimmick. They know that if we enter from a woman, then it will even be easy for the woman to convince the husband".

Several issues combined at this time to produce anxiety amongst men and hostility towards MDP: the take-over of Zambia Sugar by foreign investors and reform of the pension scheme coincided with the arrival of an overseas-funded clinical trial recruiting people for VCT on the sugar estate (MDP). According to the staff members I

⁷⁵ In 2002, Zambia Sugar implemented changes to its pension scheme, establishing a defined contribution pension scheme. Prior to this, all employees received a post retirement gratuity paid on retirement. From April 2003, this gratuity was only paid to employees over the age of 50 at that date who did not transfer to the defined contribution fund (Zambia Sugar 2005).

interviewed, not only were clinical trials alien to the community, but HIV was highly stigmatised and HIV testing was neither widely available nor widely acceptable. Fear of death, loss of income, desertion by one's spouse and community rejection were discursively bound up with knowing one's HIV status, and since anti-retrovirals (ARVs) were not available, people admitted there was little incentive to test. At the same time, MDP was drawing what were perceived to be large amounts of blood and was giving women money (reimbursement for their participation) when they came to get tested. There has been a long-standing association between Satanism or witchcraft and sudden or unexplained wealth in this community⁷⁶; one of the MDP research assistants told me:

Ben: OK I've heard witchcrafts, you know, you've probably heard also that witchcrafts, they can move from here to London within seconds and do their business then come back the same day, the same evening. What are they using? I'm told they're using blood.

CM: They're using blood?

Ben: Human blood. As fuel. If it gets finished, that's when they drop, land-crashing. You crash somewhere in Zimbabwe or somewhere, you'll be found naked there. So people always take it (as true) and mostly blood has been used for rituals, people getting rich; they've heard of people getting rich in Mazabuka because of blood. They are selling blood. All that kind of stuff. So people are scared of anyone talking about human blood, they think they're selling it for rituals or for getting rich, which is, well I don't know, it's a belief. It's a belief. It may be true. (Ben, research assistant)

Since it was not known what MDP did with the blood it drew, nor where it got its wealth from in order to be able to pay women, accusations of Satanism were easily levelled. Many staff I spoke to attributed the rumours to men's ignorance of the research process and procedures. However, some also expressed ambivalence as to the verity of the rumours, as Ben does above, switching between discourses of truth and belief. These discursive shifts give cause to question the 'ignorance hypothesis' used to account for rumours in medical research settings such as this.

⁷⁶ This association is widespread in Africa (Comaroff and Comaroff 1999; White 2000).

Responding to fear, exclusion and the threat of power loss: The contest over knowledge

Whilst some staff proposed that the Satanism rumours were a response to lack of familiarity with research trials, they can also be interpreted as “a way of talking that encourages a reassessment of everyday experience to address the workings of power and knowledge and how regimes use them” (White 2000: 43). Focus group discussions with men of all ages were permeated by a discourse of exclusion regarding the trial, and a sense of injustice that they had been sidelined by the researchers. The following extracts typify the comments that were made:

You find that here, they very much welcome women (rather) than men and when they are doing these researches of theirs, it's just between the MDP and the women, but forgetting their husbands.

When we came, you explained why you have come here. But then the focus is on women. Then we have forgotten that those women are not on their own, there are people looking after those women; but then those people - you don't want them.

You know what we are saying is that as men, from the beginning, we are not directly involved in the programme. Because there has never been a time when MDP called men to explain to them about the benefit they would get from gel. This (focus group) is maybe the first step you are taking as MDP to involve men. That's why we are saying we are not seeing the benefit of our women using gel. It's like it's them alone benefiting. Then the concern is that if family planning - there are these rumours that they are contaminated with the HIV virus - how safe is gel to our women? That is another question. It could be with these other contraceptives; maybe it also has some complications of a woman using (it).

The last of these extracts points to another, less prevalent, rumour that some men voiced about gel, namely that it might be contaminated with HIV. Such stories about Western researchers deliberately reducing the population through the spread of disease or by

limiting fertility are a commonly documented response to medical research in Africa (Feldman-Savelsberg et al. 2000; Geissler and Pool 2006). The fact that MDP was recruiting women only, without actively seeking to involve men in the trial, seems to have exacerbated the suspicions the community had more generally towards this new medical research. Specifically, by excluding men from the process, the trial threatened established power relations between men and women, whereby decision-making is a male prerogative and women must seek permission for their actions.

In this community, as in Zambia more broadly, women are brought up to be submissive to their husbands and to follow rather than initiate (Bond and Dover 1997; Milimo et al. 2004). Women are not generally regarded as autonomous individuals; customary law treats them as dependents, with property and inheritance rights contingent on marriage or family ties. Although legally women's rights are determined by both customary and statutory law, with the latter prohibiting discrimination against women, in practice, customary law undermines this and provides the dominant discourse through which women's subordination is secured. Under customary law, women and all that they produce are the property of their husbands (Byrne 1994); popular proverbs reinforce this, for example '*Mwalumi ngo mutwe wa ng'anda*' ('A man is the head of the household') and '*Bakaintu tabajisi mitwe*' ('Women do not have brains') (Milimo et al. 2004)⁷⁷. Ben, a research assistant at the site, put it very succinctly: "*Most women, once they get married, they are like a product to a man; it's like the way you buy a chair, the way you have a stool, the way you have a shirt - the man controls...the man pays. Somehow it's like I have bought that person, it's like she belongs to you.*"

The discourse of male ownership of women played out through the male focus groups and in interviews with *alangizi*, traditional marriage counsellors for women, who relayed the techniques through which female subordination is cemented prior to marriage. Dual discourses of African tradition and Christian doctrine were used by both women and men to legitimise patriarchal control of women, with Biblical references to women being the weaker vessel and having a duty to submit to the husband common. Consonant with traditional values, Christian discourse emphasises

⁷⁷ These are Tonga sayings typically heard in Southern Province, where the trial took place. However, such sayings are present across the country; see Milimo et al. for others in Bemba, Lozi, Ngoni and Chewa.

the importance of motherhood, servitude and 'good conduct' (Seidel 1993). In recent years there has been an upsurge in Christianity in Zambia (Colson 2004) and in this community, the Church can be seen as a highly popular and influential institution of normative coercion⁷⁸. Whereas clinical trials are not yet normative, the Church is fully established, and provided objectors with a powerful discourse with which to contest notions of women's empowerment. Across all groups of participants in my study – community men, female trial participants, male and female staff members and other key stakeholders – there was an acknowledgement that the man is the head of the household and the appropriate behaviour for a woman is to inform her husband and seek his permission in all matters.

By recruiting only women to the research, and gaining only the woman's consent to participate and use gel, men saw the trial as disregarding this well-established norm and directly challenging their control over their wives. It is in this context that we should consider the rumours linking MDP to Satanism – as an expression of mistrust towards "formations of knowledge and power that reach deep into their everyday lives, and which are set in a world order that provokes their doubts" (Geissler and Pool 2006: 975). In the first instance, men's doubts related to the fact that women could enrol and use gel without their knowledge or consent, as this male focus group participant illustrates:

Now, you find that when she comes here, she comes here on her own...me, I don't know what she comes here to do, I don't know who attends to that person, you see. And then she just comes out and gives me orders, "this is what I will be doing from now onwards". You see, as men, we don't accept such orders. OK? So, this mistake was made from the word go. Had it been that when they started this programme, if my wife was interested in this programme, it was going to be better for them to say, "OK, is your husband there?" "Yes" "OK, we want him as well, let him also come".

⁷⁸ Foucault referred to religion, law and medicine as 'coercive institutions,' disciplining individuals through everyday surveillance such that their actions were both produced and regulated by them (Petersen and Bunton 1997).

More fundamentally, however, some men were extremely concerned about the shift in the locus of control over women: from themselves to the trialists. In more abstract terms this can be seen as a shift of patriarchal control from the traditional African household head to the Western scientist-come-emancipator. If we see the clinical trial as a form of what Foucault calls disciplinary power, controlling women through the surveillance of their bodies and other techniques such as regulation of their fertility and imposition of conditions on their sexual behaviour⁷⁹, then it is easy to see how the trial subsumes the role of the husband in controlling his wife's sexuality.

Yamba has suggested that rumours such as those circulating around the trial be considered as "expressions of a traditional discourse, as a local protest against the hegemony of important local people, who are perceived as allies of local NGOs and the government" (Yamba 1997). Given the Zambian staff's pivotal position at the interface between UK government-funded scientific research and the local community, this explanation is a plausible one. Yamba's interpretation of witchcraft in Chiawa, Lusaka Province, relates specifically to HIV prevention discourse; he argues:

The presence and hegemony of a global knowledge, expressed in the discourse of HIV/AIDS prevention, exists and is known even in the remotest of villages. The chief propagators of this global discourse and knowledge have their allies in local big men. But the incomprehensibility of the discourse generated, and the logical inconsistencies, are what have led to the resurgence of the traditional discourse (Yamba 1997: 219).

In the case of MDP, the 'logical inconsistencies' can be seen as women taking control of the sexual encounter and the notion of female autonomy presumed by the research.

In addition to critique through rumour, some men responded to the threat of power loss in more demonstrative ways, exercising their own authority both through violence and surveillance. Whilst violence against women was said to be common in the

⁷⁹ The trial protocol stipulated that women must be on a form of reliable contraception and not intending to get pregnant in order to take part in the study. Sexual behaviour was both monitored and regulated – women were required not to have more than fourteen sex acts in a week, were advised not to insert things into their vagina, including traditional preparations to enhance sex, not to wash within an hour of sex, and not to have anal sex (MDP 301 protocol version 1.3).

community⁸⁰, some men reportedly used violence or the threat of violence to control their wives' behaviour specifically in relation to the research. During the three months I spent at the site, respondents spoke many times about incidents of violence involving men beating their wives and preventing them from attending the research site. There was a reluctance to go into specific details or cases, and staff members tended to give the following generalized sorts of accounts:

CM: Have you seen many cases of women whose partners have stopped them coming back (to the study)?

Gertrude: [Affirmative] Mmhmm, we've had some. And some beaten, you know, we have had such for sure, we have had. We've had some, they've stopped; although there are times they would not give the reason, but the friend would say, "Mmm, the husband, what, what". Some they would come actually beaten; you ask them, they say, "no, I fell". But the friends would say, "Actually, this person was beaten" and so on and so forth. For sure, there is big control. For sure. (Gertrude, MDP nurse)

Some women (on the trial) are still being battered by husbands and partners, because I think the men never get to learn and see the benefit of their women ... participating. (Edward, clinician)

In focus groups, some men were unambiguous in stating that they would beat their wife if she brought gels home without having informed him first. In addition to participants being beaten by their husbands, some female staff members were concerned about their own safety:

CM: So you've mentioned that you encourage women to tell their partners, in fact you almost require them to disclose to their partners - is that true, you require them to disclose first? To be allowed onto the study?

⁸⁰This is confirmed by the 2001/2 Zambia Demographic and Health Survey (ZDHS) which reported that 55.7% of women in Southern Province had ever experienced physical violence. Across the ZDHS, almost eight out of ten women in union who experienced physical violence reported their current husband/partner as a perpetrator (Central Statistical Office Zambia et al. 2003).

Lianne: Yah, that is one of the key things we tell them. We say "you don't want to bring confusions, you know." One day we will find ourselves being beaten here at MDP for no apparent reason. That's why we encourage them to go and sit together.

...

CM: You mentioned that you fear being beaten here at MDP as a staff member?

Lianne: [Laughing] Yah, you may find yourself (being beaten), because some men have been coming, [in angry voice] "Hey! What is happening? Who told you to...?" and what. (Lianne, MDP nurse)

Although there were no reports of staff being beaten at the site, the staff's accounts indicated that men's threats of violence had succeeded in influencing their behaviour.

Another way in which men exercised authority over their wives was through surveillance. While men were largely absent from the written protocol, and the power of surveillance rested essentially with the researchers, some men contested this exclusion by re-instating themselves as their wives' guardians at the trial site (guardians in the literal sense of guarding and watching over⁸¹). The counsellors and nurses related how some men escorted or followed their wives to the site, and how some wanted to be present during genital examinations:

Mary: We have had some who even escort their wives for gel collection. And he actually wants to be there during the examination.

CM: And is he allowed?

Mary: [Recalling] Mmmm....I remember the other one...we had to explain to him, we said, "what we are doing is A,B,C,D" - it was a long visit - he said, "no, I want to see what you are examining on my wife." (Mary, MDP counsellor)

In addition, there were accounts of men completing their wives' coital diaries for the study, and engaging directly with the researchers about their wives' sexual behaviour, for example to verify whether they were having extra-marital affairs. I interviewed one

⁸¹ Guardian: "one who guards...:one who has the care of the person, property and rights of another" (Kirkpatrick 1983).

such man, who said he had been counting his wife's applicators to keep tabs on her. When he couldn't account for all the used gels, he fought with his wife and sent a letter to the clinic, requesting them to inform him when his wife next came in and not to give her any more gel. When the wife showed up at the clinic, the researchers called the husband, who arrived and demanded to know with whom the wife had been using her gel. Following a heated 'interrogation' of the wife, and explanations from the trial staff, the husband took his wife home and allowed her to continue participating. According to Mary, one of the counsellors involved in the case:

Mary: I remember there was this case where a man followed the wife to MDP, he was like suspecting her of cheating on him. So when they came - he did not understand much about the gel - him said, "This gel is just making my wife to be more promiscuous" ... So when he came, we had to sit him down and we had a very, very long session with him. So when he understood he said, "Oh, OK. So you count". Because to him, he was thinking when she's given these applicators, obviously she uses some on other men. "So if they are counted then I will be the one to insert". So he's the one now who is inserting in the wife and making sure that all the applicators are used [laughing].

CM: So he's counting her applicators to make sure that she...?

Mary: [Still laughing]...she uses them on him! And actually he's the one who's even inserting in the wife.

Whilst it is possible that this represents a one-off, husbands following wives to the clinic and disputing their sexual behaviour with the researchers was reported to have happened on more than the odd occasion.

The prerogative to control both physically (e.g. by inserting gel) and psychologically (by counting applicators) arguably represents a challenge both to the disciplinary power of the clinical trial, and also to the notions of respect, autonomy, consent, and confidentiality embodied in it. The latter are constructed by research ethics as core Western values. The subject who signs the informed consent is construed as an autonomous individual, acting rationally and independently in a context of choice. The process is largely viewed as countering medical paternalism by investing research

subjects with the information (and therefore power) to freely decide their participation. However, as Corrigan observes, “the dualistic opposition between liberal concepts of freedom and autonomy versus powerful autocratic medical practices fails to recognise that power is not just a phenomenon that is exercised as an external constraint, but that prevailing cultural norms, values and systems of expertise shape the field of choice” (Corrigan 2003: 789)⁸². In the Zambian context, the prevailing cultural norm was for men to be the gate-keepers to women’s choices.

The ‘world order’ of the clinical trial provoked deep cynicism among some men, who rejected the values that the gel and the research to test it had brought, amongst these women’s empowerment and human rights. Indeed, men in the focus groups disputed that human rights were present in the Bible, claiming instead that once they married a woman and owned her, it was for them to demand sex anytime they wanted it. Contesting women’s autonomy to take part in the research, one man said, “*the woman has no longer got powers over her body because it belongs to the man*”, and another:

*R5: In actual fact, when you are talking of human rights, **these rights just came in very recently**Otherwise traditionally, even if now this time we go and raise my dead grandfather and ask him, “how were you staying in your home with your wife?” Had she...you told me to say she had some rights to say “No, I’m saying no to sex today”; unless if she’s on monthly period, then that’s the time when you cannot meet (have sex with) that woman. OK. But otherwise **these rights you are talking about, these are the things, if anything, they are going to destroy our country.***

*R8: And these rights **which have come**, they are the things which I think bring a lot of problems. (Emphasis added)*

Human rights, used as a proxy for women’s rights, was anathema to many of these men, who presented it as a Western concept that had come in from outside and threatened their traditional way of life.

⁸² For a discussion on the role of autonomy in bioethics, see (Wolpe 1998). On the rise of individualism in Western liberalism more broadly, and the relation of this to bioethics, see (Rose 1999).

Managing the trial, mediating values: MDP Zambia staff

The MDP Zambia staff were in a pivotal position at the intersection of two cultures – Zambian society and international clinical research. Deeply embedded in their own culture, and in some cases born and raised in the very community in which the research was being conducted, they were also now members of a new knowledge network coordinated from the UK and regulated by US and international guidelines (such as the International Conference of Harmonisation Good Clinical Practice (ICH GCP) and the US Food and Drug Administration (FDA)). Their role was a translational one: of standardised protocols and research procedures into the local setting, and of trial-generated knowledge into data sent back to the UK. I have alluded above to the discontinuities in world view between those at the forefront of health research in the UK and the US and those at the receiving end of the research in an African trial community. If we wish to understand not only how knowledge on microbicides has been produced, but also how the research itself has constituted the subjects it purports to describe, we need to examine the role of the Zambian staff who brokered the knowledge in both directions. How was gender handled in the making of microbicides and the re-making of local people? Was the research transformative, or conversely, in the trial's focus on one sex to the exclusion of the other, were gender norms maintained? I address these questions below, dealing first with the preservation and perpetuation of patriarchal control and then with MDP Zambia as a transgressive and transformative space.

Preservation and perpetuation: The discursive maintenance of gender norms and patriarchal control

In chapter four, I outlined the negative discourse about men that characterised the UK researchers' position on gender in Africa. By contrast, the MDP Zambia staff had a much more positive attitude towards men and male prerogative, frequently highlighting the need for men to be involved in the research, the likelihood of them encouraging and supporting their wives, of making programmes successful, and of being the friend who would remind the wife about family planning or protection. In short, men were generally presented as a potential facilitator rather than a potential barrier to the

research. Although there was also a popular mantra that “men are difficult”, this was seen to relate more to men’s need to rationalise and understand phenomena before getting on board; the staff were quick to suggest that with adequate information, the majority of men would, or did, support their wives’ participation on the trial, thereby improving both adherence and retention. For example, John, one of the community mobilisers:

So they really do play a critical role in terms of actually bringing these women here. And even in retention they play a critical role in that at times you’ll see women staying here during lunch, when they’re supposed to be actually preparing meals for their husbands, and the husband will have to fend for himself. Meaning they support their wives’ participation on the study, even if it’s not very visible, but we do take recognition of that and that’s a critical role that these men play.

John was so enthusiastic about men’s role in microbicide use that his vision of the technology for the future was essentially as a male-controlled device:

Because what I’m seeing is that in future, if microbicides are made available and they’re effective, what everyone would want to see is that a man goes into a shop, if it will be in shops, gets the gel, and then takes this gel to the woman and says, “Today we have to use this. From today onwards, we have to use this. Every time before we have sex I will remind this woman to say, ‘have you applied?’”

Female staff members were equally enthusiastic about men’s role in reminding women to use the gel and inserting it for them.

Beyond the hypothetical question of men’s involvement in the trial, the staff indicated that they also took measures to ensure that men *were* involved, essentially adjusting the inclusion/exclusion criteria to ensure that only women who had obtained their partner’s permission enrolled. This is illustrated in the quotation from Lianne, a research nurse,

above, and again below, but was also related to me by several other enrolling staff members.

Crystal: There are some cases, they come, "No, me I want to join the study, but you know my husband is not agreeing to it". I will tell them, "Go back. You know men, you know African men, you know you have to beg and beg. You find by the time you do it, the fifth time, he just says, "no, no, no, please, just go, just go" and just there you will see the woman running and she says "please, today he has allowed me, and if I hesitate he will change his mind".

CM: Do you get such cases?

Crystal: Yes, we get such cases. So we've been encouraging them to just go and liaise and liaise and liaise until the man just says, "no, I think just go, since it's like this". (Crystal, MDP community mobiliser)

Lianne: When we recruit those participants, we tell them to go and discuss it with their spouses. They must agree. Not that one person alone comes here and starts being screened and then is enrolled without the consent of the husband. What we encourage is for them to sit down together, the two of them, and agree to take part in the study.

CM: What about women whose partners don't agree?

Lianne: That one is very difficult. We normally don't allow them, because we don't want to bring confusions in the idea. (Lianne, MDP nurse)

This local re-working of the official inclusion criteria, as stipulated in the protocol, may have met with displeasure if it had been known by the coordinating staff in the UK, who were focused on meeting enrolment targets. More fundamentally, by insisting on male consent to participate, the Zambian researchers were compromising women's own right to participate in the trial freely and voluntarily as autonomous agents. Under the principle "respect for persons", the Belmont report states:

An autonomous person is an individual capable of deliberation about personal goals and of acting under the direction of such deliberation. To respect

autonomy is to give weight to autonomous persons' considered opinions and choices while refraining from obstructing their actions unless they are clearly detrimental to others. To show lack of respect for an autonomous agent is to repudiate that person's considered judgments, to deny an individual the freedom to act on those considered judgments... (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research 1979).

Underlying this concept of autonomy is a presupposition of the value of individualism, which has become the hallmark of Western liberalism, but in this context was dissonant with social relations in the trial community. As Wolpe has noted, the principle of autonomy in bioethics is socially constructed and historically situated; not all populations “share a fetish for individualized autonomous decision making” (Wolpe 1998: 55).

Crystal's words highlight the extent to which the researchers not only upheld existing gender norms, but were complicit in reinforcing these: “*you know African men, you know you have to beg and beg.*” From their point of view, however, their actions ensured that the research did not challenge the status quo of prevailing power dynamics between men and women and thereby cause upset (and potential revolt) in the community. Whilst the reasons they gave related to preserving marital harmony between couples and avoiding future conflict, it's likely that the normative pressure to bow to patriarchal authority played a significant role in their reworking of the enrolment process.

Given what staff members had told me about requiring men to consent to their partners' participation in the study, I asked about the notion of a ‘woman-controlled product’ and what staff thought about gel empowering women. This discourse has been pervasive and inextricably linked to the technology in Western (and I had assumed global) HIV prevention circles (indeed, as I argued in chapter four, the discourse of women's empowerment was instrumental in producing the technology). While some of the staff had heard the expression – predominantly at international conferences or through the media – some had not at all, and only one said she thought it was a suitable expression

to be used locally. The following responses, from interviews with staff members, in English, were typical:

CM: Have you heard the expression 'woman-controlled' in relation to gel?

Gertrude: [Blank] what do you mean?

CM: There's been a lot of talk amongst advocates for microbicides, that they are 'woman-controlled'. I'm wondering if that expression is common here in Zambia?

*Gertrude: [Hesitantly] Well...er, except that when we have almost, like, you mean like, because it's in the hands of women...mmmm....although not so much.
(Gertrude, MDP nurse)*

CM: Have you heard the expression 'woman-controlled' in relation to gel?

*Crystal: Expression 'women-controlled'... to gel...Maybe you re-phrase it?
(Crystal, MDP community mobiliser)*

CM: Have you heard the expression 'woman-controlled' in relation to gel?

Mary: Controlled how?

CM: It's like an expression that's commonly used in some of the advocacy materials, that gel, that microbicides are a woman-controlled method of HIV prevention.

Mary: [Uncertain] Mmmm...well...mmmm...but, er...I don't know, how can I explain this. It doesn't...it doesn't really affect it much... (Mary, MDP counsellor)

Since English was the language used for communication between Zambian and other researchers, both within MDP and the broader scientific community, I was surprised that this terminology, germane to the microbicides concept at its original sites of development, had not been adopted. A number of other staff did relate to the concept of a woman-controlled technology, but through discussion, the English word 'control' was always re-worked as 'use'. Ultimately, the expression 'woman-controlled' did not feature in local discourse on microbicides, whereas 'a product women use' was commonly invoked to explain what microbicides were.

Susan: Yes I have (heard that microbicides are a woman-controlled product), um, though not in, in, in the way of, I don't think the way people understand is that it's purely under the control of women. But I have heard it being phrased in that way.

CM: Is the phrase used in English or local languages?

Susan: No, in English.

CM: In English?

Susan: I've only heard it in English [laughs].

...

CM: And you said that people wouldn't perceive it as being totally under women's control?

Susan: I don't think they perceive it as that. Because, I don't know, maybe it's just because of the way our society is, there's nothing which is totally under the woman's control [laughs], so not even this can be totally under her control. So I don't think they really perceive it as totally woman-controlled.

CM: So what might it mean in this context?

Susan: In this context it means it's the woman who, um, who uses it. (Susan, MDP project coordinator)

CM: Do you actually use the word control (when discussing microbicides with potential participants)?

Edward: Well, I think so, because [chuckling]...I think so, but I think that is how we've explained, I've personally explained it, you know, and...

CM: Can you tell me that in local language, how you would say that?

Edward: In Tonga for instance?

CM: For instance, yes.

Edward: OK, Ibakaintu benu mbobano belesha musamu pesi ulamugwasya nyonse. That is to say the woman will be the one using this medicine but it will help both of you, a man and a woman.

CM: So it still refers to use rather than control?

Edward: Yes, yes.

CM: It's about who uses it, not who controls it? Am I right?

Edward: Yah [thinking] Yes, yes. OK, well...yes, you're right, yes. The one who uses it, yes. (Edward, MDP clinician)

The absence of 'women's control' from microbicides discourse at the Zambian site can be seen as a strategic way of framing the technology in terms of utility rather than gendered power relations. In *The History of Sexuality*, Foucault discusses the silences within particular discourses not in absolute terms, as the limits of discourse, but as a discretionary and strategic deployment: "There is no binary division to be made between what one says and what one does not say; we must try to determine the different ways of not saying such things, how those who can and those who cannot speak of them are distributed, which type of discourse is authorised, or which form of discretion is required in either case...[silences] are an integral part of the strategies that underlie and permeate discourse" (Foucault 1979: 27). In the local context, while it may have been possible to speak about woman's control, it was not advantageous for trial staff to mobilise such a discourse around the new product. Threats to the trial's success in the form of male opposition may have led staff to resist the Western invocation of microbicides as 'a woman-controlled technology'.

Again demonstrating the strategic use of local and external discourses, staff switched between accounts of the gel as empowering and the discursive legitimisation of men's prerogative to control its use. Many staff presented themselves in favour of women's empowerment and said they felt, or indeed had seen, that the gel was empowering. However, they also said that women needed their partner's permission to enrol in the study and use the gel, and that if a man didn't want to use the product, a woman would not be able to use it. This play of discourses became problematic for staff when pushed about what exactly empowerment might mean within the context of gel use. Pressed on the issue, various informants produced hybrid concepts of empowerment by adding prefixes and qualifiers, as below (categories of empowerment are respondents' own).

One informant spoke of 'temporary empowerment' to suggest that women were empowered by microbicides for the duration of the trial since they might be protected from contracting HIV:

C: So in your opinion, do you think gel has empowered women?

Rachel: It has, though it's a temporal one, and despite the messages that this is a trial, we don't know whether it is preventing them, for them, as long as they used it, behind their mind, they were comfortable to say, "as long as I'm using this, I may not contract the HIV". But now that some of them, they have graduated (exited the trial), in their mind they feel exposed, yes...They've had a temporary empowerment. (Rachel, MDP community mobiliser)

Another referred to 'psychological empowerment': women were said to feel more secure in their relationships because their partners liked sex with gel. In this respect, they were given the power to retain their sexual partners and therefore also their economic security. However, as Marley points out, below, women don't have any intrinsic power of their own; it is an illusory form of empowerment:

They think it increases sexual pleasure and their man will love them more - I think it has (empowered them) in that sense. I think basically, psychologically, they are empowered. They are more secure. But I think on the other level it just shows that they are truly dependent on men. It just shows how unempowered they are. (Marley, MDP social scientist)

'Husband-induced empowerment' or 'negotiated empowerment' was used by several staff members to suggest that women were empowered if their partners let them participate on the trial and use gel:

Crystal: For the...group who are married, empowerment is there through liaising. I can put it that way. Not on their own. It is like, I can say like husband-induced empowerment.

C: Husband-induced empowerment?

Crystal: Yes.

C: Explain what you mean by that.

Crystal: An example, it could be pregnancy-induced hypertension. So husband-induced empowerment. How I can put it, even though she knows that this gel is meant to empower women, she has to liaise, you know, until when the husband

gives her the go-ahead, then the husband has empowered her. Yes, that's what I meant.

C: OK, you mean that empowerment comes...

Crystal: From the husband. (Crystal, MDP community mobiliser)

The staff were keen to say that women were empowered, perhaps because women's empowerment is part of the international research discourse on microbicides. Ultimately though, they were not able to discuss empowerment without qualifying it, the result of which was to render the idea as conceived from a Western viewpoint meaningless. The Zambian researchers' discourse – both on the legitimacy of patriarchal control and the absence of real empowerment – coupled with their denial of women's autonomy in trial procedures, looks like the antithesis of emancipatory research. However, as I will describe below, whilst the discourse of empowerment may not have been authorised in the local setting, what might be called empowerment from a Western perspective was actually occurring on many levels at the site. In the following section, I will detail how the research was constitutive of both researchers and participants and how, contrary to the apparently reactionary practices above, transgressive and transformative processes were simultaneously playing out.

Transgression and transformation: Challenging discursive norms and practice

As I have been indicating throughout this chapter, MDP staff in Zambia were at the crux of a potential change in norms around sexuality and sexual behaviour, one foundational element of which is talk about sex. Through the very act of transposing Western research on sexual behaviour into the local idiom, and then transferring data back again into the international arena, the Zambian staff became experts in discussing sex. Given that open talk about sex is culturally taboo in this setting, it's important to understand both how this change was achieved amongst staff members, and also the impact it had both on them and on those participating in the research as participants. Staff members all told me how difficult it had been at the start of the study, particularly,

as Crystal said, “*mentioning the unmentionables*”. John explained how the staff had overcome the problem:

John: Well...partly it was due to the fact that we almost made a joke of sex in all the things we talked about, the language was more inclined to sexual issues. For example, in local language there are certain terms that you would use and then you just connect them to say, if someone will tell you, “I want that big one”, and then you say, “Which big one? I only have a small one” and someone will joke about it, “You! I didn’t mean that! I meant the cup or the coffee mug”.

CM: What does it otherwise mean?

John: Otherwise, for example, I have a big penis or, yah, so sometimes someone would say, “No, I slept well”, but in our local language sometimes you say, “No, I enjoyed my time there” say, “How many rounds⁸³?” then someone will say, “No, I don’t mean that! I mean something else”. So just to make jokes about every situation. So that way it helped us overcome the earlier fears and doubts we had about talking about sex.

From my informants’ accounts, the ability to break down barriers in talking about sex amongst themselves was critical to the staff’s ability to communicate about sex with trial participants and community members. The practice and performance of sexual communication, particularly through word play and jest, was presented as an important part of changing the negative discourse around sex and risk in the community. In the following account, John demonstrates the continuities between the researchers and those in the community they came from. The approach to overcoming silence on sex was the same, and in this example involved the transposition of unpopular, potentially demasculating advice into the popular macho idiom of the ‘Tonga Bull’⁸⁴:

I remember in one of the meetings or the workshops we had with Zambia Sugar employees, when I asked them how many people used condoms, they were all like looking at me strangely and then I thought, “Oh, so it means this thing is a bedroom matter and you don’t talk about it anyhow.” And then during lunch I

⁸³ ‘Rounds’ refers to the number of sex acts.

⁸⁴ My research assistant explained that this is an expression used to indicate that someone is a real man in terms of having sex.

just commented to say, "You know, you have to be prepared", there is a term or there is a saying in Tonga which says "Nkondo ngu kavumbu" that literally translated means "You don't know when you will go to war so you have to be prepared all the time". And then I changed that and said, "Sex ngu kavumbu" meaning you don't know when you're going to have sex, so you should prepare yourself all the time, and everyone came out and was laughing. And we started making in-roads in the community talking about sex. Initially we were just talking about prevention and other things. As time went on we also started making jokes about these issues and most of them also responded to the same. But it wasn't really an easy thing to do.

This process was not a one-off, but a continual evolution and sustained practice in discussing sexual matters. Several respondents illustrated this when telling me about new staff members who came to work at MDP; for example, Michael:

There are some new members of staff, you know how some people just join along the way, you know when they come, they are very uncomfortable. Maybe they're quiet, they're very uncomfortable when you're talking about sex, maybe in the kitchen there, you're busy talking about sex, you find them quiet. But as you go on, they'll be on the forefront talking about sex. And then someone will make a comment to say, "Ah, what's wrong with this place? Is it the people they choose to come and work here?" Then you slowly realise, you suddenly realise to say, no, it's not the people, it's the place itself [chuckling] because of the nature of the work, you know. So I think MDP, yes, it does that, it opens up people to talk about sex. (Michael, MDP research assistant)

Edward commented similarly on how MDP had legitimised open talk about sex: "You know, we never did before, so it's here, in the MDP interaction [chucking]!" To quote Foucault, "a whole machinery of speechifying, analyzing and investigating" sexual behaviour as part of the research meant that sex became "what one might call the internal discourse of the institution" (Foucault 1979: 32 & 28). Talking openly about sex became the norm.

An obvious question following on from change in the staff's ability to talk about sex is the extent to which this impacted norms in the community. The starting point for this is to be found in those whom the researchers had the most direct face-to-face contact with, namely the female trial participants. Michael related to me how surprised he was when a woman used very direct language (in the vernacular) during a social science interview - words like 'horny' that women might use amongst themselves but would not use to a man, especially not to a relative stranger. The implication of using such a word to a man would be that she is not 'taught' - i.e. she has not been appropriately initiated into the correct behaviour of a married woman. There are three points worth noting in this example; the first is that MDP opened the door for female trial participants to use a language normally forbidden to them - in a way it 'untaught' them⁸⁵. The second is that the example Michael gives of taboo language relates to female sexual desire - she says the gel made her horny; in other words, it is not just sexual terms broadly that he uses to make his point, but specifically terms implying women's agency of their bodies, expressed through fulfilled desire. Finally, Michael's own response to this woman is important:

Because of my experience here as a research assistant, that's why I didn't look at that woman to be 'funny', for lack of a better term. But if a woman just came up to me in the community to say, "You know, this thing does this to me" and uses that term...maybe for other men it will be a problem, because they will look at that person to be...she's useless, she's worthless, she's not taught.

This fundamental change in Michael's response, as a man, to the trial participant, a woman, suggests that the learning and un-learning of cultural norms took place in both directions between the researchers and the participants. Other male staff also spoke of "crossing the border" in terms of relating to people in their community and not always knowing how freely to speak about sensitive issues. This reported response, or change of behaviour, in relation to those outside MDP arguably built on the transgressive dynamics between male and female staff members described above.

⁸⁵ We don't know how far this 'un-teaching' reaches; would they use this language with their husband, for example? Would the same discourses available to them within the research setting be legitimate within their own homes?

Contrary to male researchers' apprehensions, female staff members spoke enthusiastically about the new confidence they had to speak about sex in the context of HIV within their communities. Some went into churches to address women's groups, others gave talks at under-5 clinics, women were addressed door-to-door and in the market. Crystal relates vividly the sort of response they received:

*We had a mandate to teach the women about the natural defence mechanisms of the vagina and at first it was a big challenge. You had to bring those terms in local language and the women would go screaming, [with mixed horror and delight] "These girls are insulting!" And they started getting excited, you know; that is something which is unheard of in our communities. So you find that even when she's feeling lazy to go for MCH (Maternal and Child Health clinic), she knows there will be a talk, the girls will be there, she just wants to come and listen! And they gave us names! Even when you pass in the community they will say, [gleefully] "Hah! That one, she says **big insults!**" And they gave us, you know, names. But slowly they adapted, but at first it was really a challenge to mention the private names in local language, and I would make sure I would ask all the languages which are there and translate the private parts into all the local languages so that when we go home, everybody understands what I was teaching! And the women would get excited, because you know the way we have been...we have been all along, you know, such things are taboo, they are not even heard of. But ...the women were happy...they were keen to learn, they would ask you this, they would ask you, the, you know, the vaginal anatomy, you know, because it's something they've never heard of. (Crystal, community mobiliser, emphasis respondent's own)*

The fact that MDP staff occupied respectable, well-paid research jobs made them the ideal locus of normative change and legitimated the breaching of traditional norms around sexual talk and communication. What were formerly considered "insults" became part of authoritative health advice. The sense of excitement at this new transgression and the potential for overt expression of the previously forbidden is tangible in Crystal's account.

Implicit in the MDP301 trial, as in other HIV prevention interventions, was the element of sexual behaviour change. Some aspects of this were made explicit, such as counselling to use condoms and gel, and advice against anal sex; others were merely implied through the way data was collected, for example asking women about their number of sexual partners. All women in the social science sub-set of the trial were provided with pictorial coital diaries depicting a range of sexual behaviours, such as vaginal and anal sex, condoms, and douching. Although designed as a form of surveillance, there were cases of these diaries being interpreted as a form of instruction (as to what to do for the study). Some semi-literate women required intensive follow up visits in order to complete these, as Margaret describes below:

She doesn't know how to mark coital diaries, she can't remember her sexual acts...so those weeks that she comes in, it's something that I have to do every week. Like in a week, I have to follow her at least twice, so that I go and ask her, "Did you have sex last night?" then I'm going to tick her coital diary and leave it.

Although it's not possible to say with any certainty, it's likely that such frequent contact, monitoring and questioning of women's sexual lives in some way impacted on women and their behaviour, at the very least promoting a sense of agency in sexual relations.

In addition to addressing sexual behaviour change at the individual level, MDP Zambia actively engaged community members at the level of normative change. One example of this was a workshop with all the *alangizi* (traditional marriage counsellors) in the district to discuss their role in relation to microbicides. Although the workshop was reportedly designed as a forum for dialogue and exchange, the researchers also told me they had been keen that the *alangizi* change their messages about dry sex and the use of vaginal inserts to achieve this. John, who had arranged the workshop, related how it had been challenging to explain everything to the *alangizi*, not least because the female staff members wouldn't talk to them. As a result, he, a man, was tasked with the job. I asked why female staff were reluctant to talk to the *alangizi* about changing traditional instruction on vaginal insertion and sexual practices. He replied:

Because most of the women here, even if they're working for the MDP, still respect the tradition very much, yah, and they also live in the same culture. It's one thing that is common here, the bridal showers, and there's a night before the bridal shower, there's everything that is talked about - sex and satisfying a man, and in some situations they've talked about dry sex, and all those kind of things. So most of these women that we are working with were uncomfortable to talk about these things because they know they are also practising the same things they are talking against. So it's really a dicey situation for them, it's easier for a man to say those things.

For the female staff to talk to the *alangizi* would have required them to openly challenge norms around women's sexual behaviour that they themselves had been indoctrinated into. Whilst they were confident speaking to women participants (as described above), this did not entail an open challenge to the very structures of cultural indoctrination, embodied in the *alangizi*. Because men are absent from women's education in sexual matters, and according to John do not themselves undergo such pre-marital counselling, it was easier for them to broach change at a more structural level in a non-confrontational manner. This example shows how MDP staff navigated change by bypassing certain forms of confrontation that would have had a negative impact on community relationships. Norms are subtly challenged, but the route through which this occurs leaves some of the status quo intact.

Summary

In this chapter I have used findings on the implementation of MDP 301 in Zambia to argue that the clinical trial can be seen as a form of disciplinary power, operating through the surveillance and objectification of the body, and creating particular types of subject in those whom it recruits. The disciplinary management of trial participants is institutionalised through daily routines and procedures which function as part of the clinical gaze; power is exercised through the strategies of observation, measurement, examination and comparison of individuals against an established norm. In the trial context, such strategies include blood testing, genital examinations, and the collection

of demographic and sexual behaviour data. The trial could potentially be called an 'institution of normative coercion,' in the same way that Foucault referred to religion, law and medicine more broadly as 'coercive institutions' (Turner 1992; Turner 1997). Petersen and Bunton illuminate the sense in which coercive is used here:

These institutions are coercive in the sense that they discipline individuals and exercise forms of surveillance over everyday life in such a way that actions are both produced and constrained by them. However, such institutions as the medical clinic are not coercive in the violent or authoritarian sense because they are readily accepted as normative at the everyday level. These institutions of normative coercion exercise a moral authority over the individual by explaining individual 'problems' and providing solutions for them. In this sense we could say that medicine and religion exercise a hegemonic authority because their coercive character is often disguised and masked by their normative involvement in the troubles and problems of individuals. They are coercive, normative and also voluntary (Petersen and Bunton 1997: xiv).

International clinical trials, such as MDP, constitute a field of power relations in which various forms of difference – such as gender, international relations and medical/lay expertise – vie for hegemony. The struggle for power, as presented in this chapter, occurred largely around women's bodies as a site of control: male control of women's physical movements; medical control of the epidemic through experimental pharmaceuticals and surveillance. Whereas the liberal Western view of women as individual, autonomous agents framed the research and provided a foundation for the discourse of women's empowerment, this did not translate unproblematically into the Zambian context. The transfer of both science (in the guise of the RCT) and technology (the microbicide) exposed their inherent instability. MDP became the battleground on which a fight to construct reality was waged between the neophyte servants of neoliberal governance⁸⁶ and the prevailing embodiment of African rule: the male head of the household.

⁸⁶ Fisher has convincingly argued that clinical trials represent a form of neoliberal governance (Fisher 2009). I use the expression 'neophyte servants of neoliberal governance' to refer to the Zambian trialists.

The discursive battles that the trial engendered were artfully negotiated by the Zambian trial staff, who had a foot on each side of the battle lines. However, had I not been there conducting these interviews, it is questionable to what extent this conflict would have been evident, and to what extent it would have remained an implicit tension in the implementation of trans-national research. The accounts I have presented were generated not only in the context of the trial but specifically in interaction with me as a Western researcher working on the trial. The deployment and orchestration of various discourses was therefore not 'naturally occurring': I did not simply observe the way in which people spoke about the trial and gender relations. Rather the play of discourses was an active product of the interactions between me and my informants: we co-produced them and each other. This itself sheds light on the assumptions and divergent priorities between those working in global health research and those positioned as the recipients of 'First World' technology transfer. My interest in microbicides as a "woman-controlled" product was not shared by informants. Their mobilisation of discourses of utility suggested a more pragmatic interest in maintaining the gender status quo in order to achieve the aims of the trial.

In their research on reproductive health, Mumtaz and Salway have noted that "the women's autonomy framework, with its focus on individualism and independence and its assumption of universal applicability, tends to over-simplify complex and context-dependent dimensions of women's lives" (Mumtaz and Salway 2009: 1352). Because my research focused on the context of the trial rather than the broader socio-cultural context, some of this complexity remains unearthed by my analysis, as do the emic meanings of concepts such as 'woman-controlled'. However, in the following chapter, I turn to the women and their partners who took part in the trial to explore the discursive production of research, technology and gendered subjects from a third angle. This will put into context the findings from both Western and African researchers presented thus far.

Chapter Seven

In Transit, In Translation, In Transition: Technology, Science & Society

We now need to find out more about how science and technology travel, not whether they belong to one culture or another – Stacy Leigh Pigg (cited in Anderson 2002: 644)

It is a curiosity that with the burgeoning of work on gender in Africa, and in particular the work on women, the subject of masculinities in Africa remains neglected. (Morrell and Ouzgane 2005: 1)

In the previous three chapters I have explored the co-production of science and society by focusing on the development and testing of PRO 2000. I have discussed how the initial development of the drug created a new subject of HIV prevention research – the powerless African married woman; how an international scientific network was achieved through discourses of partnership and participatory democracy; and how African researchers played a pivotal role in both upholding and transgressing gendered power relations through the institution of the trial. Thus far, the discussion has centred primarily on researchers and explored the process of scientific knowledge production from their point of view. In this chapter I address the other side of the coin, namely the research subjects, who were both the providers of data and the objects of conjectured empowerment.

I have already suggested, in the previous chapters, that while women were posited as the sole beneficiaries of PRO 2000 microbicide gel and the sole participants of the trial to test it, men were equally present, if tacitly, in both of these domains; men were as likely to be protected from HIV as women and the majority of women sought men's consent to participate in the research. Over the past few years, vaginal microbicide advocates and researchers have begun to address the discursive absence of men in microbicides

research by raising discussion of ‘male involvement’ in clinical trials. Within these discussions, men have largely been seen as a problem to be overcome on the path to women’s empowerment rather than as an active half of the solution to HIV prevention. For example, in a report on the ethical aspects of clinical testing of microbicides, a chapter addressing men is entitled “What to do about male partners?” – as if men were a problematic adjunct to health (Global Campaign for Microbicides 2005: 22). Reporting on the 2006 Microbicides conference in South Africa, an article in *BETA* reports that “Track C raised some controversial issues in the microbicides field, including such topics as male involvement in trials” (Forbes 2006: 40), pointing again towards the apprehension around involving men.

The need for microbicides for HIV prevention, and the related unease around male involvement, have been discursively produced within the framework of what Mumtaz and Salway refer to as the ‘autonomy paradigm’, wherein women’s limited autonomy is understood as the major barrier to improvements in their sexual and reproductive health (Mumtaz and Salway 2007; Mumtaz and Salway 2009). They note, “broadly described as ‘control over their lives’, women’s autonomy has been viewed as a set of multiple inter-linked domains including, but not limited to, decision-making authority, economic and social autonomy, emotional and physical autonomy” (Mumtaz and Salway 2007: 20). The paradigm is deeply imbued with the Western valorisation of individual autonomy as the universal moral basis of personhood. This has been debated on various levels; the universality of these values has been questioned (Triandis 1995), whilst at the same time, some work suggests that the distinction between Western and ‘Other’ notions of personhood has been over-emphasised (Carsten 2001). Furthermore, the idea of individual separateness that autonomy embodies is at odds with an understanding of people as socially embedded, that is, as experiencing their lives in relation to others (Nedelsky 1989; Mumtaz and Salway 2009).

In the field of reproductive and sexual health, there has been an emerging re-(e)valuation of the autonomy paradigm, both implicit and explicit. For example, numerous studies have started to document the benefits of men’s active participation in family planning (Bawah 2002), pregnancy health (Mullany et al. 2005; Mullany et al. 2007), and prevention of mother to child transmission (Farquhar et al. 2001; Kiarie et al.

2003; Farquhar et al. 2004; Homsy et al. 2007; Kakimoto et al. 2007). Likewise undermining the (presumed) link between female autonomy and improved health outcomes, Mullaney et al question whether women's autonomy, based on sole decision-making power, is at odds with improvements in health outcomes that can be achieved when men are involved (Mullany et al. 2005). And in an explicit critique of the assumptions underlying much research on women's reproductive health, Mumtaz and Salway demonstrate the inadequacies of the autonomy paradigm for understanding the determinants of women's reproductive health in Pakistan. Amongst other things, they highlight neglect of the socio-cultural construction of men and masculinities, and the multi-sited construction of gender relations as weaknesses of this approach (Mumtaz and Salway 2009).

In HIV prevention, the autonomy paradigm has been embodied not only in observational research, but in the very interventions and technologies designed to overcome the pandemic. For example, studies exploring HIV risk factors, or the barriers and facilitators to sexual behaviour change, often frame these in terms of women's self-efficacy or relationship power (Bowleg et al. 2000; Jewkes et al. 2002; Pulerwitz et al. 2002; Dunkle et al. 2004; Harvey and Bird 2004). Furthermore, interventions themselves – such as micro-finance initiatives and microbicides – are aimed at increasing women's autonomy in order to effect changes in HIV incidence (see for example Pronyk et al. 2006). The vogue for this approach, often related back to the 1994 International Conference on Population and Development, has led to a pervasive discomfort around men's involvement in interventions. In the microbicides field, this can be seen in key stakeholders' reticence about engaging men in trials: “engaging men too closely in the trial is ethically problematic...the result could be disempowerment of women, precisely the opposite aim of microbicide development” (Global Campaign for Microbicides 2005: 23). There is an obvious tension here regarding the site of proposed empowerment: the trial and the technology. The implication is that the technology can empower women but only in isolation from men; after all, if men are involved in the trial to test the technology, women might be disempowered.

The microbicides trial can therefore be seen as a juncture at which power operates to form and re-form both the social and the technological. In the line of previous

discussion in this thesis, the idiom of co-production can usefully be used to explore not only how gender and technology are co-produced, but also how the scientific process – in this case the phase III trial – is a part of this production. The focus here is not Latour’s Northern European laboratories populated by aggressive, competitive scientists; nor is it the ‘living laboratories’ of women’s bodies, as eco-feminists would have it. It is instead the space between scientists, non-scientists and technologies, the space where science moves outside of the laboratory and outside of the West, to the world beyond what Emily Martin metaphorically refers to as ‘the citadel’ in science studies (Martin 1998). In this chapter I explore how ideas and technologies travel, how scientific knowledge and its products bridge different geographic and social locations, and how scientific and social intelligibility are produced in a Zambian trial community.

Interview and focus group data from the MDP trial site in Zambia form the basis for this discussion. The data consist of twenty-one interviews and five focus groups with trial participants, male partners, and key stakeholders in Mazabuka. The analysis starts with a description of how gender is produced through existing institutions in the trial community. I then go on to discuss a crisis in masculinity, particularly in relation to HIV, and the role the research played in re-producing negative male representations. I explore women’s agency in appropriating the trial to meet their own agenda and how local ideologies of gender and social organization were at odds with the autonomy paradigm which originally spawned microbicides.

Discursive production of gender in the MDP301 trial community

Gender relations in Zambia are characterised by inequity in multiple domains of life, including labour, wealth and education. The legal and institutional context reproduces such inequalities through customary law, which tends to treat women as dependents, for example denying them independent property and inheritance rights (Byrne 1994). The 2004 Zambia Strategic Country Gender Assessment identified “culture, in this case patriarchy, and socialization as key to gender relations” (Milimo et al. 2004: viii), and as Dover notes, “If we take gender to be the social construction of masculinity and femininity, in which culture elaborates on the sexed body, then socialization and

enculturation are the most important formative processes” (Dover 2005: 174). Whilst gender is repeatedly constructed and performed through the praxis of daily activities and interactions, a conscious set of teachings and practices congeals dichotomous gendered identities at the point at which a man and a woman get married. Marriage counselling prepares men and women to take up the roles expected of them in their adult life; in Zambia, such instruction is provided primarily by two institutions – *Alangizi*, traditional marriage counsellors; and the Church.

In the MDP trial community in Mazabuka, the majority of women were said to receive marriage counselling, and trial staff referred to the re-production of gender norms and expectations through this process. In order, therefore, to understand how gender was produced in the trial community, I interviewed four key informants who offered pre-marriage counselling: two church leaders (one from a large Protestant church and the other from a large Pentecostal church), and two traditional marriage counsellors (*alangizi*). In addition, I used focus groups with both men and women to explore the discursive production of gender ideals, masculinities, and relationships between men and women. Whereas the key informant interviews provided information on the topics covered during young men and women’s initiation into married life, the focus groups gave a window onto the social production and perpetuation of gender identities in action. As I discuss below, the differences in discourse between the focus groups and the interviews with men, women, and couples, provided important insights into public norms and contrasting private accounts.

Women’s subordinate status in relation to their husbands formed the central axis for all teaching, whether traditional or religious. Whereas the *alangizi* focused on techniques to guarantee women’s submission and thereby ensure their marital and financial security, the religious leaders emphasised the reciprocity of love and obedience between *both men and women*, which formed the basis for marital unity. In this respect, the religious leaders voiced what might be termed a more progressive discourse on women’s position while the *alangizi* bought in to the so-called ‘patriarchal bargain’⁸⁷.

⁸⁷ The patriarchal bargain refers to strategies women use to ensure their survival and security within a socio-economic context dominated by men. Although by employing such strategies women support existing patriarchal structures which disadvantage their own sex, in the short term they may gain economic or social rewards for themselves (Kandiyoti 1988).

However, the roles the *alangizi* ascribed to women did not rest on a belief in women's innate, or God-given inferiority, as did the discourse of the religious leaders. For example, one of the pastors I spoke to was very much wedded to a biologically deterministic view of gender, based on his interpretation of the Bible. According to him, a man was a head of the house because...

...when a man catches something, he will run with it longer than a lady. Women are naturally emotional. They will get hold of something but easily drop it. Man, rationally, is a realistic person. They want to analyse something...naturally, a woman is like a kite, they quickly [indicating with his hands the motion of a kite flying away]. But the man will be the string to the kite, will give the guidance. At the end of the day you will be very successful.

Many men in the focus groups and interviews reflected these sentiments and used Biblical references to validate male dominance. The idea that men were naturally rational (in contrast to women) was pervasive.

The *alangizi*, on the other hand, did not express ideas about innate gendered superiority, but based their teachings on pragmatics designed to protect a wife in her marriage. Whatever a husband's behaviour, a wife should respect him and maintain the integrity of the home by listening to him, looking after him, and keeping any misdemeanours, such extra-marital affairs or abuse, secret. Marital harmony should be preserved at all times through submission (as opposed to the love and obedience advocated by the Church); this should permeate all aspects of daily life, no matter how small. For example:

If the husband says "today I want to eat kalembula⁸⁸," even if the wife wanted chicken she should follow what the husband wants and prepare what he wants to eat and that brings harmony in the home, and when there is harmony the man will have no reason to have extra marital affairs because the wife is submissive. (Lillian, traditional marriage counsellor)

⁸⁸ Sweet potato leaves

Women in the focus groups largely reiterated ideas about appropriate behaviour for husbands and wives, as taught by the *alangizi*. Women should be respectful of others and of themselves; should maintain high standards of hygiene; should work hard and not be lazy; should take care of the husband and all his needs; should be stable and found in the home rather than out and about; should not be talkative or outspoken; should not quarrel with the neighbours; should be humble, submissive and monogamous. In addition, having the financial means to look good and dress well was seen as a sign of a successful wife. A wife who would not be respected was one who could not employ appropriate tactics to manage her husband, and would end up being beaten by him:

R: Others beat (their wives) [laughter]

R: Some they do beat.

...

CM: What distinguishes a man who beats and a man who doesn't beat?

...

R: The woman's behaviour.

R: The married woman.

R: The behaviour of the woman.

Interpreter: The woman's behaviour?

R: Yes, the woman's behaviour. She can be talking with the husband inside the house but she will come out and start shouting and people will know that her husband does not beat her.

...

R: Why shouldn't a man beat his wife when he knows that she is misbehaving?

That women themselves condoned marital beatings was clear in the interviews with *alangizi*, one of whom remarked:

It doesn't make sense to start exchanging words when the two of you are annoyed, because in the end you can just get beaten and your friends will laugh at you because you don't have strategies about how to handle your man (Lillian, traditional marriage counsellor)

As these extracts show, wives who were beaten were the object of scorn and ridicule; the same was true of women whose husbands were having extra-marital affairs, since this could also be attributed to the wife's shortcomings. As mentioned above, women's re-inscription of the prevailing gender discourse can be seen as part of the patriarchal bargain, the dynamics of which I discuss in more detail below.

In spite of instruction to act submissively, women's role was not defined as one of passivity. On the contrary, the *alangizi* provided detailed instruction in the ways of managing a husband using various tactics that maintained the cloak of subservience. Therefore, although such teaching could be seen to ensnare women in the trap of patriarchal dominance, in more subtle ways it taught them how to negotiate the play of power with their partners whilst ensuring their own security. In an interview with one of the *alangizi*, she had told me that it was correct for the wife to respect her husband in all things. Following this, I asked, "Is the husband always right?" Her reply demonstrates how even within the confines of prescribed gendered power relations, the woman retains agency:

Husbands most of the time they don't do right things and they tell lies...but being a woman you just ignore and find ways and means of bringing happiness to your home...I tell him when we go to sleep, that "big man, your lies are getting out of hand. What you did that day did not please me". However, I do not bring it up the same day, I wait until he has cooled down, that is when I bring it up that "I was not happy with what you did that day, you really offended me in this or that way when you told that lie". And the man would even laugh and apologize there and then. It does not mean because you are a woman you cannot talk, no; it is a matter of knowing the correct time to talk. (Lillian, traditional marriage counsellor)

The public discourse on gender constructed men as the legitimate head of the household: strong, able to reason, and possessing the financial muscle to provide for the family. The man's authority in the home was presented as absolute and God-given; accompanying this was the just use of force to discipline other members of the household, be it women or children. Whereas both the *alangizi* and the religious

leaders emphasised that men should be faithful to their wives, there was widespread acknowledgement and even expectation that men would have multiple sexual partners. Such behaviour is encoded in local sayings, for example “*Ubuchende bwa mwaume tabonaula ing’anda,*” meaning “a man’s promiscuity does not break a home”. Focus groups with men were particularly revealing of the social construction of masculinity as virile and violent. The extract below provides one typical example of the public performance of hegemonic masculinity:

R1: Customarily, like here in Africa, especially us Zambians, as a man I have the right to have intercourse with my wife whether she likes it or not. That is the part of abuse we are talking about. You find a woman will have no say, because we even say, “I paid lobola, I paid a lot of animals, so why should you refuse?” So that is the abuse we are talking about.

Interpreter: I am a Tonga bull! [Laughter from the group]

R1: Yes, I’m a Tonga boy, I want to have it now, I want to have sex! So the woman will have no option but to just give in because she’s married.

R4: And just to add, yes, I can agree, we do abuse women or ladies. Maybe you are just from somewhere, (you go) to a bitch. You do what you want to a bitch, as you come back home, you also want to do (have sex). You get HIV there, and you come and add to a person who is innocent, which is now part of abusing. [In pleading woman’s voice] “No, my friend, this is late time, you are from somewhere, you left home in the morning and came at 05.00 and you want me to have sex with you? No, better we sleep and maybe we do after some time”. “No”, you know we do fight sometimes as Africans, “No, I’m not here to sleep, I’m here to fuck you. To produce.” [All laugh]. So we do abuse women through sex, like us blacks.

In this focus group with men aged 18-30, ‘abuse’ was used rhetorically as a token of masculinity. In part this display was probably for my benefit as a European woman of the same age and I contributed to the production of this discourse by asking questions about male/female power within sexual relationships. Nonetheless, within this context, the discussion of abuse as a man’s right was a consciously ironic counter-discourse to that of human rights, which was said to have come from the Europeans and had just

been raised in relation to why women might need microbicides. Although there were mixed feelings amongst other participants as to whether men force their wives to have sex, there was agreement that “there’s no rape between a married couple” and that in some cases, ‘abuse’ was simply down to men’s consumption of alcohol. Debating this, R4, one of the most vocal participants, continued:

R4: Me, I drink beer [interpreter and others laughing], what we call Shake-Shake⁸⁹, Lusaka Beer - those things give appetite.

Interpreter: Appetite?

R4: Yes, for sex. You knock off, you hammer (drink) one pack, or two packs, when you go to bed, Yah! It’s like it’s a pump [making sexual gestures of “pumping” a bicycle/woman; laughter from the rest of the group], I’m just pumping, like a bicycle, a woman [laughter]. You start pumping from 24:00, you maybe reach 01:00, just pumping, or 04:00!

R1: So it is like forcing?

R4: No, it’s not abuse, they do agree sometimes. It’s the culture. It’s the culture.

CM: It’s the culture?

R4: Yah, we are used to that. And so now they say, “yah nda mujana musankwa” “yah I have found a man”, this is now a real man! Eh? [Laughing]

There was little space in this discussion for alternative forms of masculinity to emerge, although it was clear that not all of the men felt represented by R4’s comments. In many of my interviews with men and women, men’s relationship to alcohol was seen both as a part of their manhood and a contributory factor to their sexual behaviour, be it sleeping with prostitutes, having unprotected sex or forcing their wives to have sex with them. The ascription of such behaviour to ‘culture’ legitimated this dominant stereotype of masculinity⁹⁰.

⁸⁹ An improved version of local brew that is sold in cartons.

⁹⁰ Various researchers have discussed men’s macho behaviour, including the resort to alcohol, sexual promiscuity and abuse, as a response to a crisis in masculinity that has led to the expression of disempowerment through violence (Duggan and Hunter 1995; Morrell 1998; Silberschmidt 2005). This crisis has arisen through historical and economic developments in East and Southern Africa which saw men defined as breadwinners during colonial times and subsequently faced with high levels of unemployment in the post-war period (Campbell 1992; Silberschmidt 2005). Low wages, unemployment

Masculinity in crisis

By contrast, in individual interviews, men expressed alternative aspects of their masculinity which cast into relief the performance of 'the Tonga bull' as a public display of male stereotype. Whereas the expectations of men were publicly extolled as victories of masculinity, in private, the discourse was of the pressures some of these behaviours brought with them. For example, whereas in the focus groups men were discussed as the stronger sex because of their financial muscle (amongst other things), in the interviews, they discussed the weight of this responsibility and the hardships of being the primary provider:

William: There are times when it is difficult, whereby you don't even know what to do and then you find that your partner says that, "Me, what I want..." - maybe there is no relish⁹¹, no charcoal, no mealie-meal⁹², no cooking oil, no salt; "You, my father, you are the one who got me (married me), everything is in your hands. You are the one who is supposed to look for something the children will eat." So it will force you to answer your wife that, "now where can I find the money?" ...

...

Interpreter: What do you think about that issue? How do you feel?

William: There is nothing that I feel because I know that I am the one who has done such a thing, these children are supposed to eat every day. If I don't look for money it means this one (partner), I won't stay with her, because she can leave, because hunger has come at home and you (the man), you are not looking for money; you want the woman to look for money. So if she goes and looks for another man, then he gives her the disease; and if it so happens that you have the disease - the bad one is me, who is not looking for food to give this person. So I am supposed to always look for food to give her, that's when we can live together. (William, male partner, 35)

and job insecurity continue to make it difficult for men in this community to live up to the socially defined role of man as breadwinner.

⁹¹ Relish refers to any accompaniment to *nshima*, the staple food in Zambia.

⁹² Mealie-meal is maize flour used to make *nshima*.

Whilst in groups, men said they were too busy working hard to chat idly about issues like HIV, in extracts such as this they indicated that they were keenly concerned about HIV in the context of their families and that the constant search for petty labour was a source of worry rather than pride.

Likewise, while still acknowledging sexual promiscuity as a feature of their lives, in private accounts, men described their infidelity to their wives in a more conflicted manner, highlighting the tensions they perceived between socially sanctioned male behaviour and the consequences for themselves and their families. Their discourse was one of paternal obligation, as below, with an emphasis on the welfare of their children in the event that they contracted HIV:

With some of us men, we don't hold on (siti zigwila i.e. we are promiscuous). So you will find that even if you have a family of children at home, you are even doing such things (sleeping with other women). Because where we go in bars, for you to realize that "I have done such a thing", it is after the beer has finished. Then when you go home, maybe you have gone with diseases, and then you start giving them to your partner. Instead of you dying alone, so that your partner remains to look after your children that you have left, you find that you have infected each other and get sick at the same time. There will be no one to look after those children. (Richard, male partner, 29)

Men showed themselves aware of their risk of contracting HIV through unprotected sex and had obviously considered the consequences of this for themselves and their families. Some men expressed regret and self-reproach, but in spite of this, presented themselves as unable to resist the lure of extra-marital sex. In a society where men's social value and esteem is tied both to their role as breadwinner and to their sexual control of women, extra-marital sex may provide an expression of success where such masculinity is threatened. Silberschmidt has written that "With control over women being an important social index for their masculine reputation, many men seem to have "chosen the lifestyle"...of (aggressive) sexual behaviour with multiple partners. This behaviour seems to have become a tool to acquire self-esteem, a tool of domination and control over women as well as a legitimate way of manifesting masculinity"

(Silberschmidt 2005: 198). Although this study did not seek to document men's actual sexual behaviour, Silberschmidt's explanation relates plausibly to their discourse, in which they presented themselves as incurable sexual risk-takers.

In line with an acute personal sense of vulnerability to HIV, men also described a deep and pervasive fear of learning their HIV status and the difficulty the trial presented to them in terms of confronting this fear. Debilitating sickness and death were the presumed outcome of learning one's status, and with this, the attendant loss of control and social status. The image of sero-positivity was directly at odds with the social construction of the 'big man'⁹³ as strong, hard and resilient. Interview participants commonly reported cases of men skirting knowledge about their status and widespread avoidance of the subject in male-male communication. The acknowledged norm was that women discuss HIV frequently in groups because of their interest in safeguarding their family's health and their constant exposure to health services through family planning and child health clinics. Men, on the other hand, said they lacked their wives' courage in confronting the subject of HIV.

Within the MDP trial, HIV testing represented a site of confrontation for men, requiring them to negotiate multiple and competing representations of masculinity: the Tonga Bull who can have as many women as he wants (and may likely be infected with HIV); the breadwinner who provides economically for his wife (and may not be able to work if he's found to be positive); the paternal role-model responsible for raising his children (who will not live to see his children succeed him if he gets a positive result). Some men, then, constructed the test as potentially conferring an identity upon them that they were not prepared to accept. Several described how difficult it was to engage with the trial because of the issue of testing; one said, "*It takes a man to have much courage and confidence to get involved in a research programme*" and likewise another male partner: "*Us men, it's not easy for us to come for such trials. It takes someone's courage to come for it*". The implication was that most men did not have this courage.

⁹³ 'Big man' was used both as a term of address to men themselves and when talking to women about their husbands. This expression alone is a powerful public re-inscription of hegemonic masculinity.

Challenging and re-producing gender: The MDP trial

Men's fear of learning their HIV status had implications not only for their own involvement in the trial, but more specifically their partners'. Men implied that their exclusion from the study exacerbated their fears around HIV, since they were not targeted with information and did not have an opportunity to discuss their concerns first-hand with the trial staff. A number of men admitted that fears about learning their HIV status led them to propagate rumours that MDP was Satanist. One man confided how he had put up obstacles to his wife going to MDP before she had managed to convince him to let her go:

All I wanted was to find means and ways to prevent my wife from going there, because one, I was scared. Once she's found out she's positive, then automatically I will be also, I will be thinking I'm positive, and maybe that's the end of our relationship. (William male partner, 35)

And similarly another:

I had no plan to come here until she told me, "let us go and see what is there". I said, "But for what reason?" I didn't even want to come because I thought, now when we are found wanting, we are infected, how are we going to go? You know, it's always fear. So we didn't want. And this is why men do not want to come here. If you just go round, you will find most men will say "no thank you". (Simon, male partner, 53)

In fact, in the focus groups, men said they were extremely keen to be involved in the programme, only that MDP didn't want them and hadn't provided any outreach to men. Their discourse was one of exclusion and injustice; men were "difficult", they said, because had they had been left out. A comment from one of the pastors depicted how the research itself constructed men as difficult by presupposing male opposition to microbicides, not least in the suggestion that gel could be used covertly:

Anything hidden brings suspicion and it doesn't matter how much she might explain, at the end of the day, expect an opposition. And that opposition will be blind opposition with no knowledge, but just defending, that as a man, he should have been taught this. For her to come in his house with this lack of knowledge of what it means to be head of the house, [booming] "I am the head of this house!" And so you will create a man, give him crocodile skin for nothing⁹⁴. Because what you don't know you are afraid of. And naturally what you are afraid of you want to oppose (emphasis added).

Indeed the creation of men as the enemy was deeply imbued in the very concept of microbicides as a woman-controlled product, the genesis of which I discussed in chapter four. Men in the focus groups showed an awareness of this ascription and performed to the stereotype of male abuse. Whilst the performance of this identity may have preceded the programme (as hinted at by the pastor, above), it was an identity that MDP authorised and perpetuated.

If the trial constructed men as both absent and difficult, it constructed women both as powerless victims imprisoned in patriarchy and as autonomous individuals capable of independent action. Although the trial team was composed of a variety of researchers from both Africa and the UK, and from disciplines spanning biomedicine and the social sciences, common buy-in to these assumptions was needed for the study to function. The rationale for the technology was women's powerlessness, but it embodied the potential for women's autonomy, an autonomy implicit in a woman's individual consent to enrol. Indeed, the fact that women were able to enrol in the trial is indicative of the fact that they were neither powerless victims nor autonomous individuals, but rather that the play of power between partners was operating in a much more nuanced way. *The relationship* within which gendered power relations operated was central to women's susceptibility to HIV infection – for example in the unequal power relations that make

⁹⁴ The pastor uses this metaphor to illustrate how men are unjustly demonised: they are cast in the appearance of the crocodile, a vicious - and much feared - animal. He may additionally be drawing on the Biblical imagery of the leviathan (often taken to be a crocodile) in the Old Testament Book of Job (41:1-34), for example: "Will he make many supplications to thee? Will he speak soft words to thee? Will he make a covenant with thee? ... Behold the hope of him is in vain, shall not one be cast down even at the sight of him? None is so fierce that dare stir him up...Who can open the doors of his face? His teeth are terrible round about. His scales are his pride, shut up together as with a close seal..." (The Holy Bible 1999).

condom negotiation problematic – and to their participation in the trial – since they needed their husband’s consent to take part. Yet this very relationship itself was not considered by scientists to be germane to the research.

During marriage instruction women are traditionally taught how to manage their relationship with their husband using strategies that retain the cast of submissiveness. In addition, the women I spoke to discussed how they appropriated power from various sources to circumvent relations of dominance that disadvantaged them. In their accounts, they did not try to ‘control’ their husbands themselves, but rather to mobilise external authorities to steer their husbands or exert pressure on them, thus preserving their own ‘submissive’ status. For example, one woman reported how she had taken her husband to the police for having an extra-marital affair and squandering the household income on his girlfriend rather than on her and their son. The police advised the husband to renounce the girlfriend for his own good, advice which *he decided* to take. Another described recourse to the husband’s relatives to seek their intervention in his unacceptable behaviour; and both women and men described how wives could go to a husband’s employer to obtain his salary if he was not providing adequately for the family. In each of these reported scenarios, women indicated how they mobilised techniques of power through their interactions with traditionally powerful institutions: the police, the employer, the in-laws. What they did not claim to do, however, was openly divest their husbands of power, nor was their stated intention to disrupt the relations of dominance within the household.

Likewise, women navigated their participation in the trial in a strategic manner, accessing a programme that challenged the gender order by appealing to their normative identity as dependent subordinates. In other words, to access the gel designed to empower them, it was strategic for women to act within their prescribed gender roles. For many women, the first such strategy was gaining their partner’s consent to participate in the trial in the first place. Data from the representative social science subset of the trial showed that 83% of women disclosed gel use to their partners and a high level of male involvement in wives’ enrolment was clear in the data for this study. In the previous chapter I discussed how the trial staff made male consent an informal condition of women’s enrolment, however according to women’s own accounts, the

majority also saw this as a benefit rather than a drawback and a process they would have pursued regardless. Within all but one of the women's narratives, the idea that they could enrol secretly or use gel without their partner's agreement was presented as alien, impractical, undesirable or a combination of these. Only one woman I spoke to was hiding gel from her partner and was unabashed about the merits of covert use: *"It is simple to hide from a man and it is up to you as a woman...to me it is just okay"*.

Generally, involving one's partner was presented as part of the dues of married life and provided it was done in the right way, said to promise a favourable outcome. It was constructed as being constitutive of the very ideal of unity and togetherness which characterised a good marriage and furthermore provided women with an opportunity to address aspects of their sexual relationship that were wanting. For example, by sharing trial information and materials with their husbands, women could raise the topic of HIV and discuss risk – not because they were implicating their husbands, but because it was part of the trial information:

I just felt good (about getting his consent), because he is supposed to know, "where my wife is going, what she is going to do is this and that", and he is supposed to be fearful to say that HIV is real because when he just stays in the community there will be nothing that he will know, so it is supposed to be that when he comes here he sees that for real, HIV is real in Zambia. So even him, he is supposed to know how to behave, to say "I am supposed to behave like this." (Sarah, trial participant, 31)

Rather than describing the need for their partner's consent as disempowering, some women delineated the opportunity inherent in it, as Sarah, above. Other women spoke similarly of how they used the trial's surveillance techniques – such as quarterly HIV-testing and monthly pregnancy tests – to instil a sense of responsibility in their partners in terms of remaining HIV-negative and not getting pregnant. In group discussions, women spoke of the difficulty of telling their partners their desire to stop having children or space the births; whilst some had become adept at concealing their use of family planning methods, for example by hiding pills in the mealie-meal, others took advantage of the trial's stipulation that women must not get pregnant in order to participate.

You know, as far as I am concerned it has brought a lot of change in my home. Do you know why I like the trial? I am a mother of two, and every month I am made aware of my status, including whether I am pregnant or not. In the neighbourhood where I come from it has done us a lot of good, people are aware that they should not get pregnant carelessly, because if you become pregnant you will have to stop participating on the programme. (Female FGD participant in the 18-30 age group)

They mobilised the trial's power of surveillance to influence their partners' behaviour, motivating them to use gel and condoms, cut down on their extra-marital sexual relations and accept the need for contraception:

You know, men are naughty, but even if they involve themselves in extra-marital affairs I have something I am using. At the same time he is also going to reduce (his affairs) because he knows that 'since my wife goes to the trial, where she has tested negative, maybe I am also negative'. So even if he was womanizing he would reduce. (Female FGD participant in the 18-30 age group)

Women alluded to the fact that since they had tested negative at study enrolment, if they subsequently tested positive, suspicion would fall on their husbands as being the culprits, and their extra-marital affairs bring shame on them. For example:

...my husband benefits [from my being on the trial]....because even the way he used to move ('moyendela', meaning here 'behave'), at the moment he has that fear, because when I tested here I was found to be negative...(Stella, trial participant, 21)

Such techniques were consonant with women's existing strategies to appropriate power from various sources to circumvent marital relations of dominance that disadvantaged them.

“They are one body. They are just one person. My husband and I are one”⁹⁵

In the trial community gender was constructed through the social prescription of particular characteristics and roles to men and women, and these were upheld through a discourse of togetherness which emphasised mutuality. From the interviews and focus groups it appeared that whilst authority was designated a male attribute and men exercised power over their wives, women also had agency in the household and possessed strategies with which to circumvent, subvert or appropriate their husband’s power, as above. In a study of East African masculinities and femininities Silberschmidt similarly records that “while women would often express self-limiting culturally accepted expectations to them as women, in practice, they would be very entrepreneurial agents” (Silberschmidt 2005: 194). Women and men appeared to uphold prevailing relations of power, because of the social rewards it brought to both sexes in terms of meeting gender ideals. Problems between men and women were not attributed to the gender hierarchy but rather to a failure by one sex or the other to meet their prescribed duties (e.g. male responsibility for breadwinning and female subservience).

The discourse of togetherness was paramount not only in accounts of the decision to enrol, but also in both women’s and men’s portrayals of gel use. This represented nothing more radical than an extension of the prevailing ethic of unity in marital relationships, which was repeatedly iterated as an ideal and a practice that informed all daily activities⁹⁶. Whilst gaining male consent to participate was portrayed as a normal part of married life and its attendant strategies for success, women and men also rationalised this by saying that HIV affects both women and men and that both partners would be exposed to the gel; it was almost taken for granted that men were ‘part and parcel’ of the research:

The ones who are supposed to participate in the MDP programme, it is us women, including men, we are supposed to unite. Because like these diseases,

⁹⁵ This is a quote from a 27 year old trial participant, Veronica, referring to married couples.

⁹⁶ It has been observed elsewhere that collaboration, negotiation and compromise are central features of African gendered life (Nnaemeka 1998) and that “this is because African women and men face the challenges of daily life together and their unity is their strength” (Morrell and Ouzgane 2005: 6).

when they come they are not supposed to come for one person. When they come like in this house then both of us will be affected. So even on the programme we are supposed to unite the two of us. (Beatrice, trial participant, 39)

If you agree as husband and wife that we shall be using gel, that automatically puts him on the programme. (Female FGD participant in the 30+ age group)

It is my wife who is using it. So in using it, we are using it together, so it means that even me, I am on the programme. (Richard, male partner, 29)

Women's and men's accounts of using the gel suggested that the autonomy paradigm from which it had emerged was deeply at odds with the ideals of marital relationships. Women's control as conceived by the Western developers was not a concept with any currency; it was neither a presumed feature of the research nor a desired attribute of the gel. On the contrary, male control was seen to be deeply implicated in the product's effectiveness and the success of the trial. Men were responsible for allowing their wives to enrol; for agreeing to gel use and reminding their wives to insert it; for facilitating wives' continuing participation throughout the follow-up period (e.g. by taking on child care duties); and in some cases for contributing to data collection (e.g. by helping wives complete coital diaries or attending in-depth interviews).

Although the gel was distributed through the trial institution in Zambia, as noted in the previous chapter, the trial staff did not conceive of the gel as 'woman-controlled' but rather as something that women use. I suggested in chapter four that the gel was produced and – at least temporarily – stabilised in Europe and the US as a product for women, thanks to a rights-based discourse on women's empowerment. However, making the gel available to trial participants in Zambia was not simply a case of technological diffusion (implying a finished product); rather, the technology's very inconstancy became apparent at its point of use. The following anecdote illustrates the contingency of PRO 2000's meaning in the Zambian context:

Okay the issue of gel, when she came I was coming from work and I found an item in the house; then I said, "what about this thing, what...?" At first I was thinking

that maybe it is relish which is inside. I asked her "what is this?" "It is gel". So me, I asked that "is it gel for the hair or what?" Then she said "no, it is for women, this one." "So how does it work?" Then she said that, "You just insert it, that's all". Then I said "okay. You know we are used to gel for the hair - that is strange". So that's when she told me that "with gel they have told us that you have to do this and that"...Then I said "even me, how am I going to be squeezing on myself?" Then she said "no, it's just me alone, you will find it in me; that's all." (William, male partner, 35)

This anecdote points not only to the ongoing interpretative flexibility of the gel when transposed to other settings, but also to the process of stabilisation occurring *between couples*. The centrality of dialogue and spousal communication to this process should not be underestimated. Whereas the gel was originally posited as a stealth product for women and covert use remains an oft-cited advantage of the gel in the West, as I described above, the majority of women in the trial used the gel in discussion with their partners. Recently, the high level of gel use 'disclosure' – or hypothetical desire for this – has been presented in the scientific literature as a surprising finding (Coly and Gorbach 2008). However, it is only surprising if we accept the framing of the product as designed for covert use, bearing in mind that the prevailing norm is for partners to discuss things they're going to use together. In this setting, the gel was not 'adopted' as an object of women's control; on the contrary, it was configured as a product that men and women use *together*.

Power and change in the knowledge ecology

If the gel could not be said to 'empower' women through the mechanisms envisaged by the developers, the trial nonetheless incorporated processes that had a bearing on power relations between men and women. The primary conductor of power was knowledge, the circulation of which was channelled in distinct, and perhaps novel, ways by the trial. Women were the initial and primary receivers of knowledge via the trial staff. Firstly, they attained knowledge of their HIV status, which was a pre-requisite for enrolment (women must not only be willing to have an HIV test, but to receive their results). Built

around this was pre-and post-test counselling, which educated women about HIV, including modes of transmission and options for protection. Secondly, they were the recipients of knowledge about the gel, receiving information about its development and testing, as well as detailed instruction on how to keep it, insert it, negotiate its use, document its use, adjust existing practices around it (such as vaginal douching and inserting), plus anticipated benefits and side effects. Thirdly, through ongoing clinic visits, counselling sessions, physical examinations and educational events, they obtained wide-ranging sexual health information and were fed a constant stream of knowledge about their bodies in terms of STIs, pregnancies, and other ailments, which were under regular surveillance⁹⁷.

The surveillance of women's bodies and behaviours produced particular kinds of knowledge that have typically been used as disciplinary techniques to monitor and control the HIV epidemic. Such monitoring and analysis can be seen as an example of what Foucault calls 'biopower'. Outside the trial context, the focus has been on women's traditionally-defined childbearing role as the locus of these techniques, for example routine antenatal HIV screening and prevention of mother to child transmission (PMTCT). Biopower requires individualizing knowledge about particular (women's) bodies in order to extrapolate to whole populations and identify scientific criteria for 'the norm'⁹⁸. According to Foucault, norms play an important role in the power/knowledge relation in constituting the subject (Foucault 1979).

In contrast to the biopower represented by antenatal screening and PMTCT, the microbicide gel shifted the techniques of power from the medical domain (such as the hospital) to the woman's own intimate environment and ultimately her own body. She was the one invested with knowledge of the product, charged with dispensing it to herself, identifying potential side effects in her own body and accurately reporting to the

⁹⁷ Women were required to come to the clinic every four weeks to have a pregnancy test, answer a short clinic questionnaire and collect gel supplies. In addition, every quarter, they were required to undergo a long and detailed clinic interview about their sexual behaviour, have a genital examination, and have swabs and blood tests for HIV and other STIs. Women at the Zambian trial site were 'followed-up' in this way for twelve months.

⁹⁸ Figures on HIV prevalence in women, collected through routine ante-natal surveillance, are commonly used by international agencies such as the World Health Organization (WHO) and UNAIDS to compile statistics about a country's HIV prevalence and incidence: "HIV prevalence among pregnant women attending antenatal clinics (ANCs) remains the principal data source to inform trends in the epidemic" (Ghys et al. 2006: i52).

trial staff. Because the trialists relied on women to use the gel as instructed outside the direct observation of the study, women were invested with considerable agency, the exercising of which was fundamental to the success of the research. Therefore, the knowledge the trial generated from women's bodies was not merely an end in itself (in terms of answering the research question); rather, it was simultaneously a means to self-care and self-surveillance on the part of women, and a tacit promoter of compliance to trial-stipulated behaviours by the study.

In the focus groups, women identified their accumulated knowledge from the trial as distinguishing them from other women who had not taken part in the research, as this brief extract highlights:

Interpreter: Is there any difference between you ladies who have been coming to MDP and those who have not been coming?

R: We are different.

R: Us, we have been enlightened (bama ti punzisa) about these diseases and we know how to avoid them since we are taught that "this disease, I am not supposed to do this and that". So we are different from those who have not joined the MDP, they don't know anything, they don't care. Here we are being taught. (FGD participants in the 30+ age group)

The three facets of knowledge - for its own sake ('we have been enlightened'), to encourage compliance ('we are being taught') and as a route to care of the self (others 'don't know anything, they don't care') - allow for what Foucault, in his later works, referred to as government of the self through 'technologies of the self' (Foucault 1997)⁹⁹. This focus on government of the self was key to Foucault's later thought on freedom and his elaboration of resistance (Oksala 2005).

Women said that the knowledge they gained at MDP not only "enlightened" them but also liberated them: "*we become free-minded (ku angunuka mu mizeezo) because we*

⁹⁹ "Technologies of the self...permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection or immortality" (Foucault 1988: 18).

know our status, unlike those who do not come here, they are not free (taba angunukide)”. Another participant in an individual interview pulled together these aspects of enlightening and liberating to suggest that the research awakened women to themselves and to the possibilities in their lives:

Nora: This research is just okay. It will be like, it will be like In Nyanja I would say 'Galamukani' (wake up) women.

Interpreter: What does 'Galamuka' mean?

*Nora: To get smart. It is like you were asleep, then “hey, wake up!” You see?
(Nora, trial participant, 37)*

Women's expressions of being enlightened, getting smart and caring for themselves resonate with Foucault's technologies of the self; as Oksala observes, Foucault wanted to “argue the point that there is no true self that can be deciphered and emancipated, but that the self is something that has been – and must be – created” (Oksala 2005: 163).

In addition to the knowledge-content, the very act of acquiring knowledge in the first place was what some women presented as the defining feature of using gel:

It is us the women who have it (gel). We are the ones who are coming to get it and give it to the men and show them that we are supposed to use it like this and that, 'that's how gel should work.' (Veronica, trial participant, 27)

Because women were the ones being given the information on how to use the gel, it was their prerogative to share that knowledge with their partners. In this sense, women acquired power within their relationships; not through withholding knowledge of the gel from their partner, or because they tried to use it regardless of their partner's consent, but precisely because they shared the knowledge and established gel use within their relationships. In effect, by virtue of participating in the trial, women became experts in the new prevention technology, an expertise that men could not access directly but only through their partners. The following extract highlights this knowledge-power relationship:

Jocelyn: ...you, a woman, you know how to use it. That man doesn't know how to use gel. So you know that maybe gel, you have to take so many minutes, you are the one who knows, because that man doesn't come here at the clinic and he cannot know everything.

Interpreter: Okay, what if you told him that gel works like this and that?

Jocelyn: ...you are the one who knows, because you are the one who comes every day, maybe you just told him once, maybe he made a mistake of the timing and you know something. So that man, you cannot follow what he is doing, but you can just use gel according to the way you use it every time.

Interpreter: Or let us just say that...who can have the power between a woman and man in terms of gel use?

Jocelyn: It's a woman

Interpreter: Why?

*Jocelyn: Because as a woman you know how to insert gel and the way it works.
(Jocelyn, trial participant, 20)*

It's important to note here that the deciding factor is knowledge about how the gel works, not the fact that it can be used secretly or in the absence of the partner's agreement. In the same interview, Jocelyn argued that if you told your partner about the gel and he refused to use it, then you would not be able to use it. She also said she felt strongly that it would be bad for a woman not to tell her partner at all. Therefore women's power lay in the tactics of knowledge-sharing with her partner and, as with other domains of married life, was dependent on her strategies to handle her partner.

Because of the high value placed on learning within the community, and the biomedical authority embodied in the trial, knowledge about the gel had a special status. Hierarchical movement within the knowledge ecology could be obtained by women who successfully discussed the trial with their partners and involved them in the details of gel use. Whereas men were used to being at the top of knowledge chain, the trial positioned them at the bottom, or even absent altogether. Where women took part without involving their partners, and their partners subsequently found out, the prognosis for successful trial participation was poor.

Interpreter: Are there men who have refused their partners?

Grace: They are there, yes. Like I said, that when starting we started five of us, but the other three were stopped by their partners. One was beaten to say “you want to kill my children, because of where you are going (MDP)”; she is my neighbour. He beat up the wife and so the wife stopped, just like that, up to now.
(Grace, trial participant, 22)

However, where women involved their partners successfully through knowledge-sharing, they achieved the desired ideal of marital unity, thereby cementing their status as a good wife whilst simultaneously accessing the gel.

Pleasure at the consumption junction

I have suggested above that women became experts in the new technology, fluent in the knowledge system of the trial and agential in determining its outcome. I have also pointed to the interpretative flexibility of the technology, by describing its reconstitution primarily as a device for couples as opposed to being ‘woman-controlled’. Moore has observed that “each material object undergoes many different iterations in which meanings about the device are created and re-created...The meanings of each device are multiple, unanticipated, and performed in social interaction” (Moore 1997: 443). As Moore also points out, it is only when devices are used – at what Cowan calls the “consumption junction” – that the meanings of the artefact coalesce and become manifest. From Cowan’s point of view, the consumption junction is also “the place where technologies begin to reorganize social structures”, and so it is a useful conceptual device in the examination of gender (Cowan 1987: 263).

In spite of the medicalisation of women’s powerlessness as the lynchpin of microbicides development in the UK and the US, one of the most prominent discourses that the gel engendered at its point of use was that of sexual pleasure. Although women’s bodies have been posited as a site of control in terms of the HIV epidemic, and historically in terms of fertility, what women themselves talked about most animatedly was the gel as a catalyst for desire:

People of God, it stimulates someone quickly! Before I started using gel he was only able to have just one sex act, that was all, but now we have sex more than once. After a sex act he still remains on heat and wants some more. He liked it. It makes the vagina warm inside and after he has ejaculated, the woman also still insists on some more sex, 'don't come out, please continue'! [Laughter]
(FGD participant, 30+ age group)

The pleasure women spoke about occurred on many levels: their own physical pleasure from inserting the applicator and using a lubricant during sex; pleasure from being sexually-pleasing to their partners; pleasure from the intimacy and trust of introducing and talking about a novel sexual accessory; pleasure from the knowledge that they could strategically use gel use to negotiate other aspects of their sexual and reproductive lives, such as the use of condoms and contraception.

It was not only amongst women that the pleasure discourse circulated, but also amongst men, and amongst men and women together, as the following extract from a mixed male/female focus group illustrates:

R3 (M): ...[gel] maintains the vagina to...to put it in a good condition [laughter from other group members]. So Instead of using concoctions, different medicines¹⁰⁰, it builds the vagina into a good... [chuckles]

R5 (F): It stimulates! [All laugh]

Interpreter: It stimulates in which way? How does it stimulate?

R5 (F): They feel good, not so?

R3 (M): Sweetness! [Laughter]

Interpreter: No, feel free!

R5 (F): ... Someone was saying that gel feels good when they are having sex together with the husband, they feel very good, more than they were feeling in the past. That means that it doesn't only prevent HIV, there are other things that it does.

R7 (M): It adds excitement!

¹⁰⁰ 'Concoctions' and 'medicines' here refers to substances – such as snuff and dried herbs – that women may insert into the vagina in advance of sex to create a tight and warm environment said to be pleasing to the man. For more on this topic see (Hilber et al. 2010).

R5 (F): Men become more... [Others join in] More sexy! (Male (M) and female (F) Community Advisory Group members, FGD)

In effect, gel became a sexual signifier, associated at least in part with being 'sexually active'. The latter was a stated criterion of trial participation, but was construed locally to mean someone who is active in sex and, linked to this, enjoys frequent sex (this diverging from the biomedical meaning which refers simply to someone who has sex, regardless of its quantity or quality). Changes in open communication about sex within the trial context (described in the previous chapter) undoubtedly allowed this discourse to be voiced, so that the technology and the research can be seen to have mutually configured each other. Not only that, but the new technosexual scripts which gel use engendered cast women not as victims, as is so often the case in HIV discourse, but as desiring sexual subjects in their own right. As Jolly has noted:

The development industry has emphasized the dangers of sex and sexuality. This negative approach to sex has been filtered through a view of gender which stereotypes men as predators, women as victims, and fails to recognize the existence of transgender people. It is time to go beyond this negative and gender-stereotyped view of sexuality, to recognize that pleasure and danger are imbricated in the ways people experience sexuality. We need to move to more positive framings of sexuality which promote the possibilities of pleasure, as well as tackling the dangers at the same time (Jolly 2007: 24).

Summary

This chapter has explored how science and technology travel and how both gender and technology are co-produced through the practice of clinical research. The title of this chapter refers to three main processes that the results of this study have suggested: technology in transit, science in translation, and society in transition. The notion of flux is an important one; flux is inherent in the interpretative flexibility of artefacts, scientific practice and progress, and the construction of gender identities. Work in postcolonial technoscience has begun to move these ideas beyond the confines of the

Western laboratory and to provide accounts of science in diverse settings, in the belief that “all knowledge traditions, including Western technoscience, can be compared as forms of local knowledge so that their differential power effects can be compared but without privileging any of them epistemologically” (Turnbull 2000: 6). By tracing the development and testing of one candidate microbicide through both scientific and lay discourses of discovery and use, I have aimed to shed light on the negotiated boundaries and content of gender and technology as processes that cross cultural divides.

Although microbicides are now synonymous with women’s empowerment in the West, this is not a ‘natural’ function of the technology, nor is the technology stable across cultural and geographic divides. The very concept of women’s empowerment in the microbicides context is dependent on the construction of the powerless African woman at risk of HIV infection from her promiscuous and all-powerful husband. This construction provides a one-dimensional account of female oppression within the prevailing ideology of patriarchy, and fails to attend to the multiple sites of potential resistance within the micro-politics of power. The microbicide is positioned as the magic medical bullet which will ‘put power in the hands of women’. Yet, as this research has indicated, women are not the weak and powerless vessels that medical research has conjured up. In their everyday lives, women are active in negotiating micro-level relations of power with men, relations that affect their health, wealth and social standing in the community. At the same time that women enrolled into the phase III trial, they also enrolled the trial into their own strategies to achieve their desired intentions in terms of fertility, fidelity, sexual safety and fulfilment. Women constructed themselves not as powerless bodily vessels waiting for medical empowerment in gel form, but as entrepreneurs in the successful creation of marital unity. Discourses of pleasure and desire – both their own and their partner’s – were central to their accounts of using the new technology, a notion that public health and development agencies have often ignored in the past. Autonomy, and in particular women’s autonomy, were not valued or aspired to; the prevailing social ethic in the trial community was that of togetherness.

I alluded above to women’s trial participation as a ‘technology of the self’ in terms of the self-knowledge and self-care this entailed. For Foucault, technologies of the self

were not separate from technologies of domination; he argued that in order to understand the creation of the subject in western civilization, it was necessary to analyze “the points at which the technologies of domination of individuals over one another overlap processes by which the individual acts upon himself [sic]. Conversely, the analyses must also take account of the points at which the techniques of the self are integrated into structures of coercion or domination” (Oksala 2005: 164). We can see the trial and the use of the microbicide gel as simultaneously producing such technologies of domination and individual acts of self-mastery. As part of the co-production of scientific knowledge, gender and technology, women became both objects of disciplinary surveillance and agents of self-transformation. They resisted Western discourses of autonomy and rights built in to microbicides whilst subverting micro-level power relations with their husbands and partners.

In spite of the formal absence of men from the trial protocol, men were both present and active in the running of the study. At a most fundamental level, they were the gatekeepers to women’s consent and subsequent participation in the trial. By constructing men as the problem – both in the touting of microbicides as a product women could use covertly and in the exclusion of men from trial processes – the research reinforced a negative model of masculinity. Stereotypes play a powerful role in modelling and sustaining gendered behaviour, and the prevailing image of men in this community as dominant, problematical, violent and sexually promiscuous was rehearsed by the trial and male community members alike. However, in individual interviews, the fragility of this representation was made clear, as men exposed the difficulties of their role as breadwinners and heads of household. The construction of masculinity simply as a problem in relation to femininity ignores the tensions, contradictions and subversions that both women and men negotiate in performing gender roles. Masculinities are not static and fixed; as Ormrod has observed, “gender identities, like technologies, are achieved rather than given” (Ormrod 1994: 43). Men’s insecurities and fear of the research are an unsurprising response to their exclusion from the transformative processes of gender and technology (re)constitution.

In the field of HIV prevention, scant attention has been paid to women’s resistance to local relations of power, to women’s bodies as a site of desire, or to women’s own role

in constructing the self. The global discourse on women's empowerment, especially when directed at the developing world, black-boxes gender and obscures a fertile ground of negotiation and resistance. Feminist analyses that describe the 'New Prevention Technologies' as either inherently patriarchal or inherently 'woman-controlled' foreclose the possibilities of transformation in gendered relations of power. From the analysis in this chapter it is clear that the question is not whether the microbicide 'empowered' women, but what happened to the social relations of knowledge during its introduction and testing. As Emily Martin has pertinently noted:

The walls of the citadel are porous and leaky. Action and initiative go in both directions. It is less "science in action" than "knowledge in action" in a multitude of contexts, both scientific and non-scientific. (Martin 1998: 30)

Women's and men's accounts demonstrate the centrality of knowledge in action to the processes of social and technological change. Foucault used the expression 'subjugated knowledges' to refer to forms of experience and knowledge that "have been disqualified as inadequate...or insufficiently elaborated: naïve knowledges, located low down in the hierarchy beneath the required level of cognition or scientificity" (Foucault 1980e: 82). In this chapter I have moved beyond the discourses of those who develop and test new technologies, to the subjugated knowledges of the women and men who use them.

Chapter Eight

Enlivening AIDS Discourse, Reinvigorating Prevention: Empirico-Theoretical Contributions

25 years after AIDS was first reported, an institutional, commercial, professional, and even civil society industry now controls the global response to AIDS. Each party, in good faith, has a position to defend, a strategy to advance, and probably someone to oppose. It is time for new voices in AIDS to ask questions, to disrupt axes of power, and to disturb the air. (Horton and Das 2008: 422)

Opening a special series by *The Lancet* on HIV prevention in 2008, Horton and Das berated the failure of public health to put a stop to the flow of new infections occurring worldwide. In spite of a huge global industry engaged in halting the epidemic – global spending on HIV reached \$13.7 billion in 2008 (Kaiser Family Foundation 2009) – there were an estimated 2.7 million new infections in the same year (UNAIDS 2009). “Part of the difficulty facing any new and upgraded movement for prevention”, Horton and Das said, “is the way we currently discuss AIDS” (Horton and Das 2008: 421). Almost a decade earlier, as if pre-empting this, Treichler pertinently suggested that “the apparatus of contemporary critical and cultural theory prepares us to analyze AIDS in relation to questions of language, representation, interpretations, narrative, ideology, social and intellectual difference, binary division, and contests for meaning...the AIDS epidemic ...puts theory stringently to the test” (Treichler 1999: 2). However, as Mykhalovskiy and Rosengarten remarked in 2009, there has been a retreat from theoretical engagement in the battle against HIV, such is the urgent demand for ‘evidence’.

In this thesis I have explored the co-production of gender and technology through the case study of vaginal microbicides for HIV prevention. In combining theory and empirical research, I have sought to strengthen our understanding of how science and society mutually constitute new technologies for HIV prevention. However, drawing on

the deconstructive tendencies of cultural studies and STS presents a tension between epistemological relativism on the one hand and a desire to make recommendations for public health policy on the other. How tenable is such a thesis within the worlds of either public health or STS? Below, I start by outlining the empirical contribution I have made to HIV prevention research. I reflect on how various bodies of theoretical literature, introduced in chapter two, have informed this research and how this research in turn speaks back to them. Finally, I address the core epistemological tension between STS and public health approaches, and suggest potential avenues of interaction between the two.

An empirical contribution to HIV prevention research

This thesis represents the first account of how microbicides get constituted. It adds to a small but growing body of literature that analyses the meanings of prevention technologies to both high-level stakeholders and users (Moore 1997; Kaler 2001; Rosengarten et al. 2004). Almost two decades ago, Akrich highlighted the need to move beyond a focus on the design of technologies in relation to their *potential* users and examine the simultaneous definition of technology and user:

...if we are interested in technical objects and not in chimerae, we cannot be satisfied methodologically with the designer's or user's point of view alone. Instead we have to go back and forth continually between the designer and the user, between the designer's projected user and the real user, between *the world inscribed in the object and the world described by its displacement*. (Akrich 1992: 208-209)

In spite of this, there has been a persistent inclination to analyse how technologies are constructed in a particular place and time by one interested group or party. In this research, I have taken up Akrich's call, and again demonstrated that the constitution of both technologies and identities occurs across social and geographical worlds.

Although vaginal microbicides are inextricably associated with women's empowerment in the West, I showed in chapter four how there was nothing inherently 'gendered' about the technology. This became ever more apparent as I traced the technology from its point of design in the North to its point of use in the South: the instability of PRO 2000 as a product for women's empowerment was clear. Not only that, but the projected user turned out to lack representational tenacity; that is, the disempowered, autonomy-seeking, African woman, discursively enacted in the microbicides research agenda, disappeared at the site of use. The autonomy paradigm, fundamental to the technology's development, was at odds with a social ethic of togetherness in the Zambian trial community. Rather than 'receive' the technology, trial participants actively produced it within their relationships, enrolling the technological testing process into their own strategies of power negotiation.

Although technically the gel and its applicator did not change between locations and social worlds, nor were they at their destination what they were at their point of departure. To paraphrase de Laet (2000), they unravelled as they travelled. The fluidity – or ontological multiplicity – of artefacts has been described in relation to a variety of technologies, from patents (de Laet 2000) to bush pumps (de Laet and Mol 2000) to, most recently, HIV prevention technologies and trials (Rosengarten and Michael 2009b). Rosengarten and Michael have analysed clinical trials of PrEP as ontologically divergent performances, in which “trial participants are not simply recipients or consumers of the *object* PrEP but are active in its *multiple* making” (Rosengarten and Michael 2009b: 194). This research supports their observation and suggests that we need to move beyond framing solutions to HIV prevention in terms of singular 'magic bullets'.

The microbicides literature is awash with discussion of 'women's empowerment', a phenomenon which has been presumed, advocated for and disputed, but rarely defined or studied. In her work on the female condom, Kaler has presented us with “a cautionary tale about the dangers of assuming that certain values or key concepts, like 'empowerment' are universal” (Kaler 2001: 794). Following discussions with key stakeholders, in which the meaning of the technology as 'empowering' was shown to be unstable, she concluded that the female condom would likely remain “an ambiguous

and polyvalent technology” (Kaler 2001: 794). Although commentators often draw parallels between the female condom and microbicides because they are both vaginally inserted and ‘woman-controlled’ (Elias and Coggins 2001; Warren 2001; Mantell et al. 2005; Mantell et al. 2008), the more salient parallel between them – ironically – is their very multiplicity.

As I have demonstrated, it is no more obvious that microbicides are an HIV-prevention method specifically for women than that they could have been (and still could be) an HIV-prevention method specifically for men. The presumption of women’s powerlessness which was incorporated into microbicides during their design in the West was inattentive to micro-level power dynamics operating between women and men in Zambia. Women using the gel re-produced it as a technology for partners, disrupting the notion of microbicides as a ‘stealth product’. In so doing, they positioned themselves as entrepreneurs in the successful creation of marital unity, resisting Western discourses of autonomy. Women used the gel to enrol their partners into strategies for sexual safety, including HIV testing and partner reduction. Their ability to do this rested on the joint facets of pleasure and surveillance which the gel embodied in the context of the clinical trial.

The role of research in constructing gendered identities

Individual-based models have been the predominant basis of HIV prevention research into new technologies. The Western view of bodies as discreet and sexed, and sexual transmission occurring in an individual rather than within a relationship, has led to the development of technologies conceived as pertaining to either men or women, but rarely both. The conceptualisation of risk as residing in the individual goes back to the epidemiological focus on counting and classifying cases: men, women, homosexuals, heterosexuals, men who have sex with men (MSM), commercial sex workers, injecting drug users (IDUs) etc. Accordingly, in cognitive individual-based models, the self, governed by agency and intentionality, is both the locus of risk and the site of risk-management. Far from recognising the social construction of gender and the relational nature of the concepts ‘man’ and ‘woman’, biomedical AIDS paradigms “refigure the

social as the sexed anatomical” (Waldby 1996: 142). In so doing, they ignore the power dynamics inherent in sexual relations and thus potentially fail to increase women’s possibilities for practising safer sex.

In this research, I have shown how scientists strategically used gender representations to motivate politically for the scientific development of microbicide products. The political milieu was conducive towards ‘women-controlled’ technologies; the 1994 International Conference on Population and Development (ICPD) in Cairo had actively called for the development of such technologies and Clare Short was keen to invest money in women and development. Whereas science, and the randomised controlled trial in particular, are presented as neutral and objective, I have demonstrated that they play a constitutive role in creating the phenomena they purport to describe. This has long been recognised within critiques of biomedicine and AIDS; for example, in 1996, Waldby cautioned that:

Despite, or perhaps because of, biomedicine’s assertion of its own innocence of historical and political meaning, it constantly absorbs, translates and recirculates ‘non-scientific’ ideas – ideas about sexuality, about social order, about culture – in its technical discourses. (Waldby 1996: 5)

In the 1990s, the critique of biomedical research into HIV largely came from within the feminist movement and was highly critical of representational practices that disadvantaged women (Patton 1990; Treichler 1992; Patton 1994; Waldby 1996; Treichler 1999). Wilton observed that:

In the context of sexually transmitted diseases...[there is] a specific discursive package ‘sex’, whereby ‘womansex’ coalesces around notions of disease, contamination, death, treachery, excess, liquidity and entropy, all representing a danger to men. Within this paradigm, ‘man’ is assigned attributes of cleanliness, health, patriotism, life, discipline, order and control...(Wilton 1997: 126)

Two decades later, there are signs of a representational reversal within some areas of STI research, such as microbicides development. Men are no longer the

unproblematized and invisible producers of HIV prevention discourse – “clean, healthy and safe” (Wilton 1997: 67). They are now the ‘diseased Other’, cast as the enemy against which women must protect themselves¹⁰¹.

The discursive production of gender identities through scientific research linked to new technologies represents a site of potential oppression for both women – as vulnerable vessels in need of medicalised empowerment – and men – as infected aggressors. However, as I have shown in this thesis, biomedical discourses can be resisted, disrupted and re-produced through the de-description of emerging technologies. In the Zambian site where my fieldwork was conducted, the meaning of the gel as a woman-controlled device, with all that that implied, was not stable. Covert use was largely rejected by women, who instead sought to use *disclosure* of gel use and trial participation as a means of negotiating power with their partners. Men were involved in using the technology; that this was not self-evident from the designers’ point of view at the outset shows the disjuncture between development ideals of women’s empowerment and the reality of dyadic sexual relationships.

In the MDP 301 trial, as in many other health and development projects aimed at women, men were posited as a problematic Other. Regressive stereotyping, which portrayed men as power-possessing, sexually irresponsible, callous and uncaring was used to motivate for women-controlled HIV prevention technologies; at the same time, women were portrayed using “victimization rhetoric” (Kapur 2003). This approach is part of a wider trend, as identified by Peacock et al:

Efforts to draw attention to the many ways in which AIDS maps onto and reinforces women’s subordination have been relatively successful – at least in terms of raising awareness of the issues and securing national and international commitments. However, too often, to create a sense of urgency, these efforts have described men in broad brushstrokes as inevitably violent, irresponsible

¹⁰¹ See for example the following typical extract on the need for microbicides: “Although the use of condoms has slowly increased in countries most severely affected by the HIV epidemic, many vulnerable women are unable to ensure they are used. An effective and affordable vaginal microbicide, whose use could be controlled by women, would represent an important addition to the armamentarium against HIV infection” (McCormack et al. 2001: 410).

and uncaring. Messages have often traded on stereotypes common in the global north about men and women in the global south. (Peacock et al. 2009: S122)

Peacock et al argue that such stereotyping ignores the fact that multiple forms of masculinity exist at the intersections of class, race, sexuality, disability and nationality. The discursive perpetuation of a singular, negative masculinity obscures the existence of men who do not fit the 'norm' or who are actively working to challenge rigid gender roles. Although Peacock et al focus on human rights and other policy interventions to involve men, I wish to argue that research (which may precede interventions) plays a fundamental role in maintaining, perpetuating or disrupting gender identities. A clear example of this was presented in chapters four and seven; in chapter four, the analysis showed how men were configured as absent and difficult in the development of microbicides and the trial to test them. In chapter seven, I showed how Zambian men performed to this stereotype in focus groups and public discussion of the research.

In a paper on familial relations in South Africa in the context of AIDS morbidity and mortality, Montgomery et al drew attention to the disjuncture between fieldworker accounts and observation of men's roles regarding 'non-traditional' behaviour (such as caring and housework). The paper highlighted that "whilst there is a linguistic and conceptual locus for the discussion of 'deficient' men, no such language appears to exist to talk about men who are positively involved with their families" (Montgomery et al. 2006: 2415). This was as true for the participants in the study *as for the researchers*, and meant that incomplete data on men's involvement with their families was collected. The current thesis provides further evidence that research design and practices have a direct impact on the knowledge we accrue, disseminate and use to inform interventions.

Although I have demonstrated the role of the scientific process in constituting gender in Zambia, I have left gender relations relatively unproblematised in the UK. At the start of this thesis, I pointed towards a desire to be even-handed in the treatment of study settings, for, as de Laet has pertinently observed, it is not only what is far away that needs to be understood, since what is nearby is equally strange (de Laet 2000: 150). This one-sidedness represents a deficit in the current thesis, which future research might productively attend to.

Biomedical technologies, human technologies and technologies of the self: Contemporary operations of power/knowledge in the clinical trial context

By tracing PRO 2000 across its sites of development and use, I have been able to shed light not only on the technology itself, but also on the networks of actors who both defined and were defined by its socioscientific trajectory. The organizational structures and cultures that constitute a large, trans-national clinical trial present extreme variability: spatially, temporally, institutionally. Gaining analytic purchase on such an entity is not an obvious undertaking; following a technology through late-stage testing, as I have done in this research, presents a viable way to explore trials and research partnerships. Instead of focusing on the network qua network – which may result in descriptive, structural analysis rather than explanation – tracing the technology through social worlds throws into relief the values, morals, politics and ideologies which accompany its development.

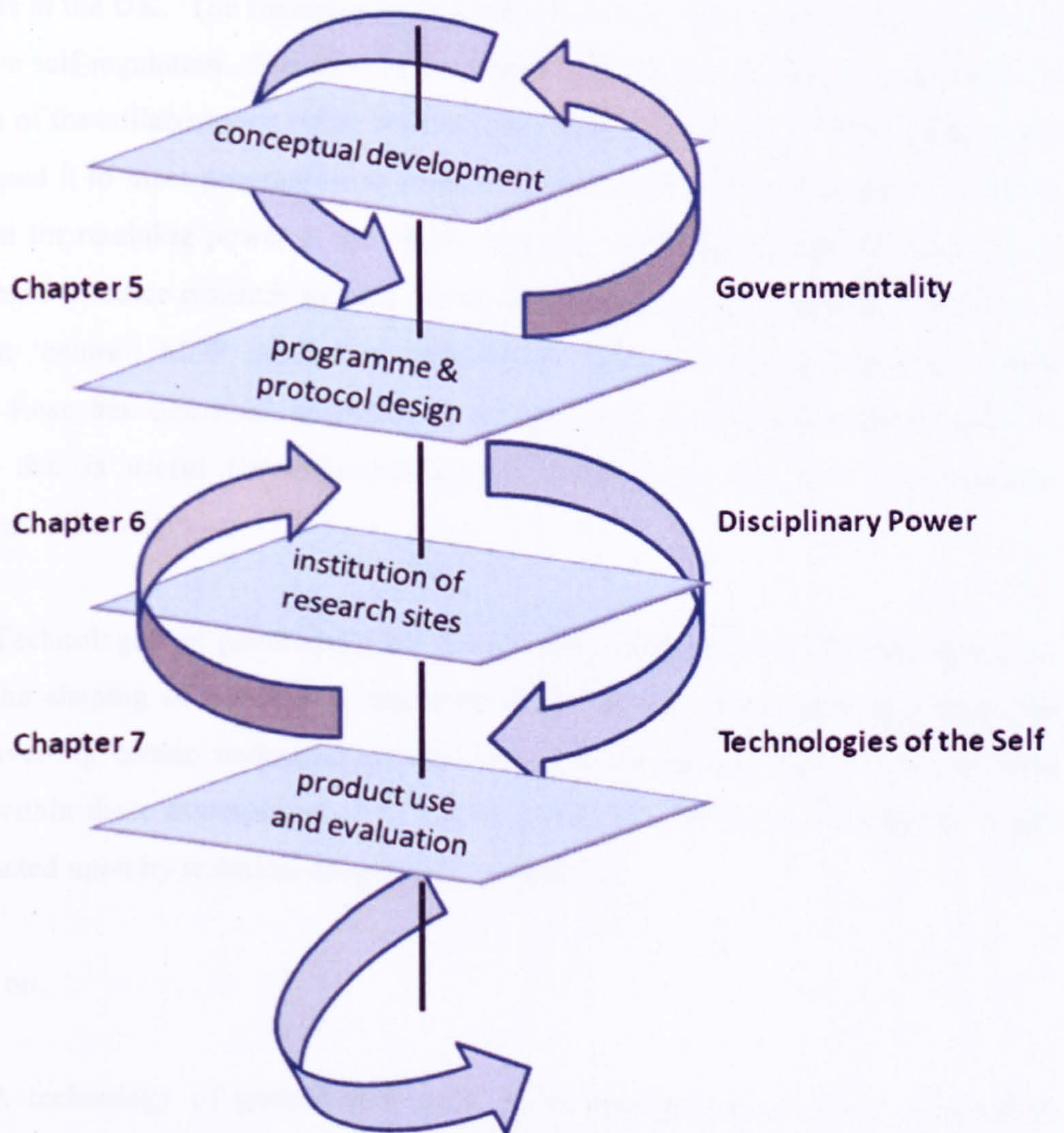
Precedents in the field of anthropology have predominantly focused on industry – big pharma – which presents a particular set of relationships and working practices that are not consistent with public-funded, academic-led trials. For example, Petryna (2009) and Fisher (2009) both discuss the inherent manipulation and oppression of vulnerable populations by profit-driven pharmaceutical companies¹⁰². Relationships between trial entrepreneurs and experimental subjects are shown to be driven by medical neoliberalism and pharmaceutical profit-mongering. According to such studies, the profit-motive is deeply implicated in the negotiation of the experimental landscape, including medical, ethical, regulatory, and managerial practices. By contrast, in this research, I have shifted the focus away from both the laboratory and the pharmaceutical giants to explore what is becoming an increasingly prevalent phenomenon: the product development partnership (PDP) in public health (Sorenson 2009). Work on PDPs has centred on power and governance to date (Buse 2004; Buse and Harmer 2004; Backup 2008; Tucker and Makgoba 2008), issues which are germane to this study. However, the empirical contribution this work makes is to examine the production of both gender

¹⁰² For example, Fisher: “I am interested in how the system of clinical trials itself...can be exploitative of individuals and groups, given the persistence of social, political and economic inequalities in the US” (Fisher 2009: 129)

and technology at the intersection of social-scientific governance, where financial profit is not the primary objective.

We are obsessed in HIV prevention research with the power relations between men and women in Africa – one of the so-called ‘cultural’ factors that accounts for high rates of HIV transmission on the continent. But not often discussed are the power relations between public health interventionists and the men and women we seek to prevent acquiring the disease. This is not surprising given the discipline’s positivist outlook. However, when questions are asked about the failure of the scientific community to curb the spread of HIV in Africa, a certain degree of introspection might lead public health researchers and interventionists to consider their own role in perpetuating or disrupting relations of dominance. Whereas such a critique has been directed at the pharmaceutical industry from outside, in this study I have pursued a form of internal critique. Using Foucault’s work on power has provided a critical yet constructive apparatus through which to analyse relations operating at the interlinked planes of clinical research into microbicides. Since academic-led trials operate in a knowledge-driven landscape (rather than being profit-driven), Foucault’s theory on the relationship between knowledge and power has been particularly useful.

Figure 3: Threads of power linking planes of clinical research into microbicides, as analysed in this thesis



At each of these planes, there is a web of discourse delimiting regimes of truth, be it the scientific hegemony of the RCT or the merits of ‘Third World’ capacity building. However, these planes are not discrete and insular but contiguous, joined by threads of power; the web of relations extend from plane to plane, such that power/knowledge at one level bears on that at others.

Each of the empirical chapters in this thesis addresses issues of power in the context of clinical research, focusing on one plane at a time. In chapter five, for example, I discussed the discourses of democracy and gendered capacity building that united disparate groups across Africa around a protocol largely developed by a core group of scientists in the UK. The success of this approach rested on the participation of sites in their own self-regulation. The form of government that MDP instituted presupposed the freedom of the collaborators; rather than denying their capacity to act, MDP harnessed it and shaped it to meet programmatic ends. Therefore, whilst the programme could be criticised for retaining power at the centre in terms of setting the scientific agenda, in comparison to other research models which work by imposing sovereign rule from a Northern 'centre', MDP created an institutional space of regulated freedom (Rose 1999). Rose has discussed technologies of government as 'human technologies', a concept that is useful for understanding the interconnections in a large research programme like MDP:

Technologies of government are those technologies imbued with aspirations for the shaping of conduct in the hope of producing certain desired effects and averting certain undesired events. I term these 'human technologies' in that, within these assemblages, it is human capacities that are to be understood and acted upon by technical means. (Rose 1999: 52)

He goes on:

A technology of government, then, is an assemblage of forms of practical knowledge, with modes of perception, practices of calculation, vocabularies, types of authority, forms of judgement, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth, traversed and transacted by aspirations to achieve certain outcomes in terms of the conduct of the governed (which also requires certain forms of conduct on the part of those who would govern). (Rose 1999: 52)

Using this definition, it is possible to see both new biotechnologies for HIV prevention *and the research designed to test them*, as human technologies and technologies of

government. Such a designation – underscoring the human and the technological in the practice of what is otherwise known simply as ‘science’ – signals the power inherent in scientific research. It directs us to the discourses, processes, objects, and knowledge of a system that is constitutive as well as reflective.

The trial as human technology and technology of government is illustrated by the findings of chapter six, in which I analysed the institution of the MDP trial site in Zambia. If, as Foucault suggested, governmentality is the contact point between technologies of domination and technologies of the self (Foucault 1988: 19), the Zambian trial site represents the material manifestation of such a contact point. As I suggested in chapter six, the clinical trial can be seen as an extension of the clinic, a disciplinary institution operating through the surveillance and subjection of trial participants. However, the very humanity inherent in the trial opened up fault lines of resistance, both on the part of the researchers and on the part of those being researched, for example, in both parties’ reworking of the informed consent process into a dyadic affair involving male partners. Researchers and participants alike resisted Western notions of autonomy which were fundamental to the technology’s development in the UK and US. Science and technology studies speaks of ‘configuring the user’ to describe the way in which the future user of a technology is ‘scripted’ into the artefact (Akrich 1992; Mort et al. 2009). In MDP, the user was configured as a disempowered African woman seeking autonomy to protect herself (secretly) against HIV. At the point of use, however, this script was ruptured by women’s (and researchers’) desire to involve their partners in their participation in the trial and the use of the gel. Women appropriated the trial’s techniques of surveillance to meet their own agenda in terms of sexual safety and satisfaction. This process mirrored similar strategies that women used in their everyday lives to negotiate relations with their partners.

In relation to this, I outlined in chapter seven how the microbicide gel functioned as a technology of the self, being a stimulus for body-knowledge and self-care in women’s sexual lives. Some commentators have suggested that it is in Foucault’s articulation of technologies of the self that resistance to more dominant forms of power can be conceptualised (Grimshaw 1993; Hartmann 2003; Oksala 2005). Indeed, this research finds that resistance is manifold at the sites where power is usually said to reside: in

women's oppression to patriarchy, be it in the domestic sphere or the sphere of medical intervention. Victim rhetoric about women in AIDS advocacy and research conceals these sites of agency and resistance, particularly in reference to 'Third World' women and AIDS in Africa. Partly because the subject is conveniently packaged as a singular, universal and essentialised being, the locations of agency in social relationships, and the micropolitics of power in heterogeneous configurations of experience, are erased. Kapur has suggested that:

Foregrounding the peripheral and resistive subject...scatters hegemonic understandings of culture and gender that are reproduced at the international and domestic levels. The reproductions are invariably essentialist and invite imperialist, conservative, or protective interventions. (Kapur 2003: 33)

While scientists and advocates seek 'protective' interventions against HIV, we should be mindful of 'protectionist' discourses that may underlie the forms they take. Using Foucauldian analytics of power in this thesis, I have propounded a more nuanced account of gender politics, situating local negotiations within the global processes of transnational clinical research.

Reconciling utility and epistemic radicalism¹⁰³: STS and public health

In spite of the growth of science and technology in Africa in recent decades, science and technology studies has been – and largely remains – rooted in the industrialised world; as the editor of *Social Studies of Science* remarked in 2008:

...our submissions and published articles continue to come mainly from Western Europe and North America, and our editorial board continues to reflect that fact...Currently we see very few publishable submissions from Eastern Europe, Central and South America, or Africa. (Lynch 2008: 6)

¹⁰³ I borrow this turn of phrase from Woolgar et al (2009: 13).

This supports Shrum's earlier observation that mainstream STS scholarship has neglected less developed countries (Shrum 2000)¹⁰⁴, a neglect that Dritsas also berates:

The lack of knowledge about the history of science and technology south of the Sahara is especially distressing when one considers the amount of effort expended by the development community in building up the technological infrastructure of the continent. Although it is widely acknowledged that the exchange of technology and ideas between southern Africa and the wider world has a long and intricate history, nongovernmental organizations and government-based development organizations rarely consider this history in any but the most cursory way. Exacerbating this state of affairs is the dearth of scholarship in this area beyond the hagiographies of Great White Men. (Dritsas 2003: 331)

A marriage of STS with Public Health – which has a strong developing country focus – has the potential to generate fresh insights into old problems and new solutions. Biomedical technologies, in particular, represent a fertile ground for sociological enquiry. Pointing to STS's lack of engagement with Public Health, and suggesting the intersection, raises the question of normativity in social research. It presents a troubled confluence of agendas: activist and reconstructivist on the one hand, and deconstructivist on the other. A long-running debate within STS highlights the epistemological tensions that are likely to arise when philosophical radicalism comes up against normative expectations in such a venture, as discussed below.

Symmetry and reflexivity have been major preoccupations for STS scholars over the past three decades, and linked to this, the tension between neutrality and political commitment. In the mid-1990s, a special issue of the journal *Social Studies of Science* on 'The Politics of SSK: Neutrality, Commitment and Beyond' was devoted to thrashing out some of the main arguments¹⁰⁵. This debate built on previous exchanges, such as those of the 'Epistemological Chicken' debate (Callon and Latour 1992; Collins

¹⁰⁴ Shrum remarks, "Research in less-developed countries (LDCs) continues to be neglected by mainstream science and technology studies...In the past ten years, only three of 366 published articles in *Social Studies of Science* and in *Science, Technology & Human Values* ...have dealt with agriculture in LDCs" (Shrum 2000: 119).

¹⁰⁵ *Social Studies of Science*, vol. 26, No. 2 (May 1996), 219-468.

and Yearley 1992; Woolgar 1992); those of the 'Capturing' debate (Scott et al. 1990; Collins 1991; Martin et al. 1991); and those between Winner, Pinch and Woolgar, over whether the field was, could be or should be political (see Pinch 1993; Winner 1993; Woolgar 1993). In brief, the debate has turned around how far certain principles of Bloor's Strong Programme – specifically impartiality, symmetry and reflexivity – should be taken in social studies of science and technology. If extended indefinitely, what value does radical epistemological relativism hold, since it precludes any commitment to normative belief and action? So, for example, Winner objected that the SCOT approach, as exemplified by Pinch and Bijker (with its insistence on symmetry) was "sanitized of any critical standpoint" and therefore morally and politically impotent (Winner 1993: 375). Woolgar, STS's reflexivist *par excellence*, has consistently argued for extensions of symmetry and found that essentialist weaknesses in constructivist analyses from within partisan camps such as feminism "[preclude] a coherent basis for political action" (Grint and Woolgar 1995: 304).

Pels has argued that symmetry and impartiality are illusory and that STS scholars, as much as the scientists and technologists they study, are engaged in knowledge-politics. By reshuffling the dualities in scientific controversies – right and wrong, winner and loser – analysts necessarily involve themselves in the controversy, subverting the dominant view and elevating that of the underdog. He suggests that epistemological neutrality "is a misconceived methodological cloak for...the situated *distance* and interested *autonomy* of third positions" (Pels 1996: 282, emphasis in original). The third positions he advocates are characterised not only by distance and autonomy, but by 'weak asymmetry', in which the boundary between 'the true' and 'the false' is not entirely abolished, but seen to be negotiated and constructed:

Seeing it [the boundary between true and false] as the outcome of 'boundary work' denaturalizes and destabilizes it, but does not rob it of all cultural footing...This notion of 'weak boundaries' also constitutes our model for the intricate relationship between science and politics...(Pels 1996: 296)

Pels' argument is compelling, and provides a useful middle path for those avowedly working *within*, and simultaneously critical of, science itself. Like Jasanoff's call for

co-productionist accounts (Jasanoff 1996), it suggests a re-conceptualisation of the symmetry principle that retains a commitment to deconstruction while admitting normative positions. Jasanoff goes further to posit the choices that taking such a line demands of STS scholars: selecting sites of research and analysis; selecting styles of explanation; and deciding upon prescription. Each of these choices bears importantly on any relationship between STS and public health in developing countries.

Third wave science studies and reconstructivist STS

In 2002, Collins and Evans introduced the idea of Third Wave Science Studies, or Studies of Expertise and Experience (SEE) (Collins and Evans 2002). The first wave of science studies, they argued, consisted of the positivist, pre-Kuhnian explications of scientific success of the 1950s and '60s. The second wave, which started in the 1970s and is still going strong, is characterised by social constructivism – science is reconceptualised as a social activity and the boundary between scientific expertise and other forms of knowledge deconstructed. The third wave of science studies, as they propose it, is a way to *reconstruct* knowledge through a normative theory of expertise¹⁰⁶. They propose a new classification of expertise into 'interactive expertise' ("enough expertise to interact interestingly with participants and carry out a sociological analysis") and 'contributory expertise' ("enough expertise to contribute to the science of the field being analysed") (Collins and Evans 2002: 254). The agenda, they argue, should be to "think about how different kinds of expertise should be combined to make decisions in different kinds of science and in different kinds of cultural enterprise" (Collins and Evans 2002: 271). This brings STS firmly into the upstream work of technoscientific development and normative proscriptions about public engagement in scientific decision-making.

A pertinent example that Collins and Evans refer to is Epstein's work on the AIDS treatment controversy in San Francisco (Epstein 1995; Epstein 1996). They re-frame

¹⁰⁶ The phrase 'normative theory of expertise' is Collins' and Evans' own and is introduced as followed: "...we will have to treat expertise in the same way as truth was once treated – as something more than the judgement of history, or the outcome of the play of competing attributions. We will have to treat expertise as 'real', and develop a 'normative theory of expertise'" (Collins and Evans 2002: 237).

Epstein's analysis of the triumph of lay expertise in gaining entry to the scientific core in terms of interactional expertise; that is, the treatment activists who sought input into the design and conduct of clinical trials that affected them and the gay community first had to learn the language of the science before succeeding in making a contribution. Parallels can be drawn in the field of HIV prevention research, and specifically microbicides advocacy, where campaigners have sought to influence the funding, selection, and trial conditions of new pharmaceutical products (see for example Mias and Webb 2006; UNAIDS 2007b). Campaigners largely advocate, or translate, on behalf of experience-based experts¹⁰⁷, such as women who take part in vaginal microbicide trials; in some cases they are themselves experience-based experts.

In chapter seven of this thesis, I drew attention to the expertise which trial participants in MDP acquired by virtue of extensive interaction with the pharmaceutical product and its scientific testing. Collins and Evans encourage the involvement of experience-based experts earlier in scientific decision-making – “possibly by encouraging such groups to look for spokespersons with interactional expertise in the science in question, or to encourage the growth of intermediary groups to speak for the scientific knowledge of the uncertified, not as campaigners, nor as experts themselves, but as translators” (Collins and Evans 2002: 262). Their sentiment chimes with that of Woodhouse et al (2002), who, rather than focusing on activists within the field of study, suggest science studies scholars themselves adopt a more normative stance in relation to their own academic enquiry. “It is reasonable to suppose,” they suggest, “that sufficiently skilled and otherwise ‘appropriate’ advocacy may fit into STS, along with less avowedly partisan approaches that begin with symmetry and impartiality as methodological heuristics” (Woodhouse et al. 2002: 309). The application of STS to questions concerning health and illness in developing countries undoubtedly presents a radical intellectual challenge that simultaneously opens up both fields to thoughtful partisanship and social activism.

¹⁰⁷ Collins and Evans replace the oxymoronic term ‘lay expert’ with ‘experience-based expert’ to refer to “members of the public who have special technical expertise in virtue of experience that is not recognized by degrees or other certificates” (Collins and Evans 2002: 238).

Communication between different epistemic communities

If a rapprochement of STS with public is embarked upon, the challenge of communication across epistemological boundaries needs to be tackled. Writing of future intersections between business and STS, Woolgar et al invoke the possibility of a trading zone, embodied in the social science ‘studio’, as a forum for dialogue between different parties (Woolgar et al. 2009). Galison first used the trading zone metaphor to explain how physicists working within divergent paradigms went about collaborating with each other and with engineers to develop particle detectors and radar:

Two groups can agree on rules of exchange even if they ascribe utterly different significance to the objects being exchanged; they may even disagree on the meaning of the exchange process itself. Nonetheless, the trading partners can hammer out a local coordination, despite vast global differences. In an even more sophisticated way, cultures in interaction frequently establish contact languages, systems of discourse that can vary from the most function-specific jargons, through semispecific pidgins, to full-fledged creoles rich enough to support activities as complex as poetry and metalinguistic reflection. (Galison 1997: 783)¹⁰⁸

The studio approach to social science can be seen to function as a trading zone – an institutional space in which those who produce new technologies and those who analyse them can collaborate in new and experimental ways. INCITE (the Incubator for the Critical Inquiry into Technology and Ethnography) is one example of the studio approach, bringing together traditional academic modes of production and the practices of designers, engineers and artists (Wakeford 2003)¹⁰⁹.

One of the ways in which researchers at INCITE have sought connection with each other is by “working with an artefact or an idea as an ‘interprofessional hyperlink’” (Wakeford 2003: 235). In other words, building links and collaborative discussion around an object (the examples Wakeford gives are all mobile objects). Following an

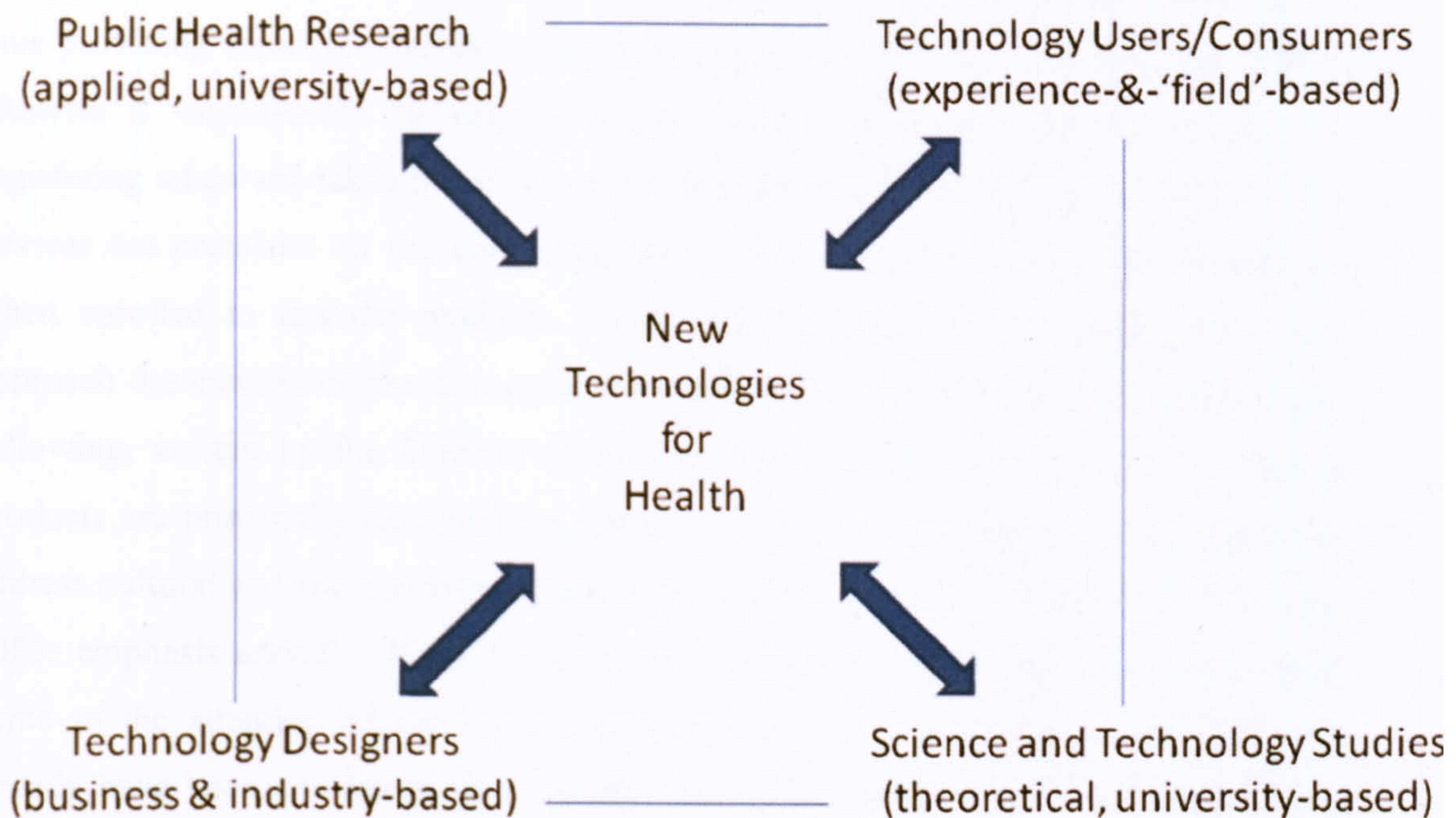
¹⁰⁸ For an extended analysis of trading zones in interdisciplinary collaboration see (Collins et al. 2007).

¹⁰⁹ For a complete overview of INCITE’s work, see <http://www.studioincite.com>. For further examples of the studio approach in social science, see (Jankowski 2007; Wouters and Beaulieu 2007).

object as it travels, and tracing the web of socio-scientific relations it navigates, resonates with the work I have conducted on microbicides in this thesis. The technology provides a starting point from which to explore complex networks and diverse cultures which may span multiple geographic locations. Work on health problems in the developing world increasingly seeks solutions in technological terms, be it vaccines, pharmaceuticals and medical devices for treatment and prevention; pandemic preparedness software for modelling and planning; or information technology such as GPS and Blackberries for data collection and analysis¹¹⁰. Work is characterised by travel across countries, continents and collaborating institutions. However, the technologies themselves tend to be seen as singular and stable objects that are either “acceptable” to users or not, with primarily evaluative research centring on cost-effectiveness, acceptability, access and uptake of new interventions. Adopting STS sensibilities through the studio approach – and thereby turning innovation itself into a critical project (Webster 2002; Mort et al. 2009) – has the possibility to reinvigorate approaches to public health research in developing countries; combined with links to business and industry, it could also radically improve technological solutions to problems such as HIV prevention.

¹¹⁰ For example, in September 2009, the WHO launched a call for innovative technologies that address global health concerns. The aim of the call was to identify and evaluate “innovative medical devices...which address global health concerns and which are likely to be available, appropriate and affordable for use in low- and middle-income countries” (World Health Organization 2009a). The list of health problems to be addressed covered everything from lower respiratory infections to malaria, HIV/AIDS, TB and cancer.

Figure 4: Proposed Studio Approach for the Development of New Technologies for Health amongst Interactional and Contributory Experts



Dialogue between these actors is already occurring in some cases: public-private partnerships already couple industry with academics; users' perspectives are sought through market research, community advisory boards and acceptability studies; and some STS scholars take new health technologies as their object of study. The problem with the existing set-up is twofold: firstly, any such interactions occur once the technology is deemed to be 'finished' so that users and critics are presented with a *fait accompli*. Community advisory boards then become the handmaidens to the trialists (achieving high recruitment and retention in the product's testing), 'acceptability' is often a question of 'tolerability' and STS studies are almost bound to be deconstructive rather than reconstructive. The second problem, linked to the first, is that during the development stage of the artefact, legitimacy is granted only to a small group of professionals whose expertise is limited. Sociologists of knowledge, experts in their own right (Collins and Evans 2002: 239-240), do not have a seat at the table; nor, very often, do experience-based experts.

Whilst the suggestion here is not to deem everyone an expert and so to render the demarcation meaningless, it is to suggest that there are circumscribed groups of experts who are not currently involved in health technology design who profitably could be. For example, in the case of vaginal microbicides, plans are underway to develop a “smart” applicator that could register time, date and ambient temperature when used, thus providing some verification of product use in clinical trials (Tolley et al. 2009); likewise a ‘sexometer’: “a vaginal ring containing electronic devices capable of registering when sex takes place” (Van der Wijgert and Shattock 2007: 2374). These devices are premised on the conviction that trial participants do not report honestly when enrolled to test the products. They are also designed by people who may approach the context of use as a quite alien and ‘Other’ world; note, for example, the following, written by the Director of Product Development at CONRAD¹¹¹: “These products are principally designed for use in the developing world and must therefore address cultural and societal issues *generally unknown in the developed world*” (Friend 2009: emphasis added). If and when such technologies reach their destination (and come to the attention of the curious STS scholar), the developing world user will already have been configured as a mendacious experimental vessel. We need to ask whether this trajectory is a positive one for HIV prevention or whether admitting previous trial participants as experts in microbicide testing and use might better inform future developments.

The literature on technomethodology¹¹² (broadly, the use of ethnomethodology in the design of technology) (Button and Dourish 1996) also suggests how science and technology scholars from within anthropology and sociology might practically engage in upstream work. Ethnomethodology has been used productively by the HCI (human-computer interaction) and CSCW (Computer Supported Cooperative Work) communities to design technologies around the work situations of users (for example Hughes et al. 1993; Anderson 1994). For example, conversation analysis, a branch of ethnomethodology, has been used to study the ways in which people interact with one

¹¹¹ CONRAD is a US-based research organization that has been at the forefront of microbicides research. It has been involved in the development of several candidate products, including PRO 2000, BufferGel, Tenofovir and UC781. See <http://www.conrad.org/about.html>.

¹¹² Button and Dourish use technomethodology to refer to “the contributions that have been made for technological support for socially-organised activity which have come from an ethnomethodological perspective” (Button and Dourish 1996: 2).

another through or around technology (Button and Dourish 1996). Button and Dourish note that “the thrust of this work is to furnish descriptions of the ways in which persons normally organise their actions and interactions and then compare this to what is possible or not possible using the technology” (Button and Dourish 1996: 2). In the case of microbicides, anthropological work has suggested the importance of the technology in reconfiguring patterns of communication and negotiation between sexual partners (Montgomery et al. 2008). The organisations and interactions between people around new prevention technologies – not just sexual partners, but the broader social group, including friends, family and peers – represent an area of enquiry and critique that could be incorporated into design. The approach, however, would need to move from a ‘tagging on’ of the social science acceptability study in late stage clinical trials to a design process that incorporates STS sensibilities from the outset. This is already happening in some industries, where ethnographic accounts of technology-in-use (‘technographies’) are integral to the design process (Fitzgerald 2005; Suchman 2007; Cefkin 2009).

Configuring the collaborators

The diagram above provides a simple schematic of the intellectual space in which collaboration around new technologies could occur. Whilst the contributions of the four parties are not likely to be symmetrical in the way the diagram suggests, the implication is that there are pockets of expertise amongst them that is legitimate within the sphere of technoscientific development in public health. Whereas public health specialists and industry developers can be designated contributory experts, STS analysts should be seen as knowledge experts, and users as experience-based experts (the latter two potentially representing interactional expertise). However, the diagram is problematic in that it has the potential to characterize each of these areas of expertise as unified fields with transcendental, essential properties. As Woolgar et al point out, “what is precisely interesting about the relation between them is how these identities are locally constituted, accomplished, made to collide or empathize” (Woolgar et al. 2009: 16). In the same vein, it is important to consider how each of these constituent parties is configured through the process of collaboration and engagement; how does a 4-way

conversation between public health, industry, STS and users in developing countries enact particular identities and arguments? What is at stake in the field of enquiry (what questions get asked), methods, and political commitments? What mechanisms of accountability govern the direction and forms of engagement between developers, implementers, users and critics?

There are no simple answers to these questions. Indeed, writing of corporate anthropology, Suchman concludes that:

Our work as anthropologists sits uncomfortably inside the close-knit interweaving of consumer experience understood as something prior, discovered through anthropological investigation and then addressed by design and marketing, and consumer experience understood as constituted *through* activities of design and marketing, in their contributions to the creation of desire and the crafting of cultural imaginaries. I do not believe that we can resolve this tension. (Suchman 2007: 13)

In spite of such unresolved tensions, as debates about interactional social science, Third Wave STS, and the links between business, e-research and intellectual radicalism develop, the field of public health would do well to engage. To appropriate Collins and Evans, “there is, of course, a certain *naiveté* about this suggestion, but unless all hope of unbiased action is to be abandoned (and why then, are we academics?) it is our duty to be naïve from time to time” (Collins and Evans 2002: 262-263).

Conclusion

How, precisely, do linguistic, social and cultural constructions shape research investigations or treatment interventions, how do they interact with the phenomena that we call data, facts, and even experience, and how, in a given historical context as well as in the intellectual and emotional existence of institutions, communities, and individuals, do they come to perform unique

cultural work? The AIDS epidemic has furnished many case studies for exploring these questions... (Treichler 1999: 327)

The Microbicides Development Programme has provided a timely case study through which to explore the questions raised by Treichler, above. However, as HIV prevention moves into the era of 'combination prevention' (Piot et al. 2008), and increasingly complex forms of scientific investigation (such as public-private partnerships) proliferate, individual case studies will cease to be adequate. Multi-scale ethnographies and critical qualitative studies will need to investigate the intersections between research consortia, technology 'packages' and multi-sectoral involvement in control programmes. Whilst these networked and fluid worlds pose a challenge for social science researchers, I have suggested that greater collaboration between different epistemic communities may provide a way forwards. As noted at the start of this discussion, in 2008, Horton and Das observed that "part of the difficulty facing any new and upgraded movement for prevention is the way we currently discuss AIDS" (Horton and Das 2008: 421). The task now is to enliven AIDS prevention discourse with theoretical insights from social theory, recognising that "the seemingly distinct biological, social, and technological are tightly intertwined and affective" (Rosengarten et al. 2008: 358). In so doing, we can not only address the complexity of HIV prevention, but also demystify the science behind it.

References

- Abraham, J. (2008). "Sociology of pharmaceuticals development and regulation: a realist empirical research programme " Sociology of Health & Illness **30**(6): 869-885.
- Adamson, J. and J. L. Donovan (2002). "Research in Black and White." Qualitative Health Research **12**: 816-825.
- Aggleton, P., R. Parker, B. Bordeaux and M. Regina (2000). Framing the sexual subject: the politics of gender, sexuality, and power. Berkeley, University of California Press.
- Akrich, M. (1992). The De-Description of Technical Objects. Shaping Technology/Building Society. Studies in Sociotechnical Change. W. E. Bijker and J. Law. Cambridge, MA, The MIT Press: 205-224.
- Alcoff, L. (1990). Feminism and Foucault: The Limits to a Collaboration. Crises in Continental Philosophy. A. Dalleney and C. Scott. New York, State University of New York Press: 69-86.
- Allen, S., J. Meinzen-Derr, M. Kautzman, et al. (2003). "Sexual behavior of HIV discordant couples after HIV counseling and testing." AIDS **17**: 733-740.
- Allen, S., J. Tice, P. Van de Perre, et al. (1992). "Effect of serotesting with counselling on condom use and seroconversion among HIV discordant couples in Africa." BMJ **304**: 1605-1609.
- Alliance for Microbicide Development. (2009). "October 2009 Pipeline Update " 1 October 2009.
- Anderson, R. (1994). "Representation and Requirements: The Value of Ethnography in System Design." Human-Computer Interaction **9**: 151-182.
- Anderson, W. (2002). "Introduction: Postcolonial Technoscience." Social Studies of Science **32**: 643-658.
- Andersson, N., A. Cockcroft and B. Shea (2008). "Gender-based violence and HIV: relevance for HIV prevention in hyperendemic countries of southern Africa." AIDS **22**(suppl 4): S73-S86.
- Annan, K. (2002). In Africa, AIDS Has a Woman's Face. New York Times.
- Anon (2005). Five Mazabuka pupils transferred over Satanism. Zambia Daily Mail.
- Anon (2007). Chief Mwanachingwala queries Health Survey. Lusaka Times. Lusaka.

- Anon. (2007). Low women enrolment threatens Mazabuka Microbicides project. Times of Zambia. Ndola.
- Arditti, R., R. D. Klein and S. Minden (1984). Test-Tube Women. What Future for Motherhood? London, Pandora Press.
- Armstrong, D. (1983). The Political Anatomy of the Body. Cambridge, Cambridge University Press.
- Armstrong, D. (1994). Bodies of Knowledge/Knowledge of Bodies. Reassessing Foucault: Power, Medicine and the Body. C. Jones and R. Porter. London, Routledge.
- Arney, W. R. and B. J. Bergen (1984). "Power and visibility: the invention of teenage pregnancy." Social Science & Medicine **18**: 11-19.
- Atieno Odhiambo, E. S. (1974). The movement of ideas: A case study of intellectual responses to colonialism among the Liganua peasants. History and Social Change in East Africa. B. A. Ogot. Nairobi, East Africa Literature Bureau: 165-185.
- Auvert, B., D. Taljaard, E. Lagarde, J. Sobngwi-Tambekou, R. Sitta and A. Puren (2005). "Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial." PLoS Med **2**(11): e298.
- Backup, S. (2008). "Global public-private partnerships against neglected diseases: building governance structures for effective outcomes." Health Economics, Policy and Law **3**: 31-50.
- Bailey, R. C., S. Moses, C. B. Parker, et al. (2007). "Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial." Lancet **369**(9562): 643-656.
- Barnes, B., D. Bloor and J. Henry (1996). Scientific Knowledge: A Sociological Analysis. Chicago, University of Chicago Press.
- Bartky, S. (1988). Foucault, Femininity, and the Modernization of Patriarchal Power. Feminism and Foucault: Reflections on Resistance. I. Diamond and L. Quinby. Boston, Northeastern University Press.
- Bawah, A. A. (2002). "Spousal communication and family planning behavior in Navrongo: A longitudinal assessment." Studies in Family Planning **33**(2): 185-194.
- Bazeley, P. (2007). Qualitative Data Analysis with Nvivo. Thousand Oaks, CA, Sage.

- Beauchamp, T. L. and J. F. Childress (1994). Principles of biomedical ethics, 4th ed. New York, Oxford University Press.
- Berg, A.-J. and M. Lie (1995). "Feminism and Constructivism: Do Artifacts Have Gender?" Science Technology Human Values 20(3): 332-351.
- Berliner, D. and D. J. Falen (2008). "Introduction to Special Section on Men Doing Anthropology of Women." Men and Masculinities 11(2): 135-144.
- Biehl, J. and A. Moran-Thomas (2009). "Symptom: Subjectivities, Social Ills, Technologies." Annual Review of Anthropology 38: 267-288.
- Bigwood, C. (1991). "Renaturalizing the Body." Hypatia 6(3): 54-72.
- Bijker, W. E., T. P. Hughes and T. Pinch (1987). The Social Construction of Technological Systems. Cambridge, MA, MIT Press.
- Binka, F. (2005). "North-South research collaborations: a move towards a true partnership?" Tropical Medicine & International Health 10(3): 207-209.
- Blanc, A. K. (2001). "The effect of power in sexual relationships on sexual and reproductive health: An examination of the evidence." Studies in Family Planning 32(3): 189-213.
- Bloor, D. (1991 [1976]). Knowledge and Social Imagery, 2nd ed. Chicago, University of Chicago Press.
- Bond, V., E. Chase and P. Aggleton (2002). "Stigma, HIV/AIDS and prevention of mother-to-child transmission in Zambia." Evaluation and Program Planning 25(4): 347-356.
- Bond, V. and P. Dover (1997). "Men, women and the trouble with condoms: condom use by migrant workers in Zambia." Health Transition Review 7(Supplement): 377-391.
- Booth, W. (1989). "WHO seeks global data on sexual practices." Science 244: 418.
- Bordo, S. (1988). Anorexia Nervosa: Psychopathology as Crystallization of Culture. Feminism and Foucault: Reflections on Resistance. I. Diamond and L. Quinby. Boston, Northeastern University Press.
- Bordo, S. (1989). The Body and the Reproduction of Femininity. Gender, Body, Knowledge. A. Jaggar and S. Bordo. London and New Brunswick, N.J., Rutgers University Press.
- Boulton, M. and M. Parker (2007). "Informed consent in a changing environment." Social Science & Medicine 65: 2187-2198.

- Bowleg, L., F. Z. Belgrave and C. A. Reisen (2000). "Gender roles, power strategies, and precautionary sexual self-efficacy: Implications for Black and Latina women's HIV/AIDS protective behaviors." Sex Roles 42(7-8): 613-635.
- Brandes, S. (2008). "The Things We Carry." Men and Masculinities 11(2): 145-153.
- Brown, J., J. Sorrell and M. Raffaelli (2005). "An exploratory study of constructions of masculinity, sexuality and HIV/AIDS in Namibia, Southern Africa." Cult Health Sex 7(6): 585-598.
- Brown, P. and L. J. Jordanova (1982). Oppressive dichotomies: the nature/culture debate. Women in Society. The Cambridge Women's Studies Group. London, Virago: 224-241.
- Burchell, G. (1996). Liberal government and techniques of the self. Foucault and Political Reason: Liberalism, neo-liberalism and rationalities of government. A. Barry, T. Osborne and N. Rose. London, UCL Press.
- Burfoot, A. J. (1990). The Normalisation of a Reproductive Technology. The New Reproductive Technologies. I. Varcoe, M. McNeil and S. Yearly. London, MacMillan Press: 58-73.
- Burke, T. (1998). "Cannibal margarine and reactionary snapple: a comparative examination of rumors about commodities." International Journal of Cultural Studies 1: 253-270.
- Buse, K. (2004). "Governing public-private infection disease partnerships." Brown Journal of World Affairs 10(2): 225-242.
- Buse, K. and A. Harmer (2004). "Power to the partners? The politics of public-private health partnerships." Development 47(2): 49-56.
- Butler, D. (1995). "AIDS vaccine 'needs focused effort' as drug firms back off research." Nature 378(6555): 323-324.
- Butler, J. (1990). Gender Trouble. London, Routledge.
- Butler, J. (1992). Contingent Foundations: Feminism and the Question of "Postmodernism". Feminists Theorize the Political. J. Butler and J. W. Scott. London, Routledge: 3-21.
- Butler, J. (1997). The Psychic Life of Power: Theories in Subjection. Stanford, Stanford University Press

- Button, G. and P. Dourish (1996). "Technomethodology: Paradoxes and Possibilities." Available at www.dourish.com/publications/1996/chi96-technomethodology.pdf.
- Byrne, B. (1994). *Gender Profile of Zambia*. Brighton, Institute of Development Studies.
- Callon, M. (1986a). The Sociology of an Actor-Network: The Case of the Electric Vehicle. Mapping the Dynamics of Science and Technology. M. Callon, J. Law and A. Rip. London, Macmillan Press: 19-34.
- Callon, M. (1986b). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of Saint Brieuc Bay. Power, Action and Belief: a new Sociology of Knowledge? Sociological Review Monograph. J. Law. London, Routledge and Kegan Paul. **32**: 196-233.
- Callon, M. and B. Latour (1992). Don't Throw the Baby Out with the Bath School! A Reply to Collins and Yearley. Science as Practice and Culture. A. Pickering. Chicago, University of Chicago Press.
- Campbell, C. (1992). "Learning to kill? Masculinity, the family and violence in Natal." Journal of Southern African Studies **18**(3): 614-628.
- Campion-Vincent, V. (2002). "Organ theft narratives as medical and social critique." Journal of Folklore Research **39**: 33-50.
- Carsten, J. (2001). Substantivism, antisubstantivism, and anti-antisubstantivism. Relative Values: Reconfiguring kinship studies. S. Franklin and S. McKinnon. Durham, NC, Duke University Press.
- Cefkin, M. (2009). Ethnography and the Corporate Encounter. Reflections on Research in and of Corporations. New York, Berghahn Books.
- Central Statistical Office (CSO) [Zambia] and Macro International Inc. (2009). *Zambia Demographic and Health Survey 2007: Key Findings*. Calverton, Maryland, USA, CSO and Macro International Inc.
- Central Statistical Office (CSO) Zambia. (2006). "Poverty in Zambia 1991 - 2006." Retrieved 01/02/10, from <http://www.zamstats.gov.zm/lcm.php>.
- Central Statistical Office Zambia (2003). *Summary Report for the 2000 Census of Population and Housing*. Lusaka, Central Statistical Office Zambia.
- Central Statistical Office Zambia, Central Board of Health Zambia and ORC Macro (2003). Zambia Demographic and Health Survey 2001-2002. Calverton,

Maryland, USA, Central Statistical Office, Central Board of Health, and ORC Macro.

Charmaz, K. (2006). Constructing Grounded Theory. London, Sage.

Charmes, J. and S. Wieringa (2003). "Measuring Women's Empowerment: an assessment of the Gender-related Development Index and the Gender Empowerment Measure " Journal of Human Development 4(3): 419-435.

Chataway, J. and J. Smith (2005). Smoke, Mirrors and Poverty: Communication, Biotechnological Innovation and Development. IKD Working Paper No. 5/Innogen Working Paper No. 36, The Open University.

Chersich, M. F. and H. V. Rees (2008). "Vulnerability of women in southern Africa to infection with HIV: biological determinants and priority health sector interventions." AIDS 22: S27-S40.

Christian, B. (1987). "The Race for Theory." Cultural Critique 6: 51-63.

Clarke, A. and J. Fujimara (1992). The Right Tools for the Job: At Work in the Twentieth-century Sciences. Princeton, Princeton University Press.

Clarke, A. E. (2003). "Situational analyses: Grounded theory mapping after the postmodern turn." Symbolic Interaction 26: 553-576.

Clarke, A. E. (2005). Situational Analysis: Grounded Theory After the Postmodern Turn. Thousand Oaks, CA, Sage.

Clarke, A. E., J. K. Shim, L. Mamo, J. Ruth Fosket and J. R. Fishman (2003). "Biomedicalization: Technoscientific Transformations of Health, Illness, and U.S. Biomedicine." American Sociological Review 68(2): 161-194.

Cockburn, C. (1992). The Circuit of Technology: Gender, Identity and Power. Consuming Technologies: Media and Information in Domestic Spaces. R. Silverstone and E. Hirsch. London, Routledge.

Collins, C. (1981). "The Place of the 'Core-Set' in Modern Science: Social Contingency with Methodological Propriety in Science " History of Science 19: 6-19.

Collins, C., T. J. Coates and J. Curran (2008). "Moving beyond the alphabet soup of HIV prevention." AIDS 22(suppl 2): S5-S8.

Collins, H., R. Evans and M. Gorman (2007). "Trading zones and interactional expertise." Studies in History and Philosophy of Science 38(4): 657-666.

Collins, H. M. (1985). Changing Order: Replication and Induction in Scientific Practice. London, Sage.

- Collins, H. M. (1991). "Captives and Victims; Comment on Scott, Richards and Martin." Science, Technology, & Human Values 16(2): 249-251.
- Collins, H. M. and R. Evans (2002). "The Third Wave of Science Studies: Studies of Expertise and Experience." Social Studies of Science 32: 235-296.
- Collins, H. M. and S. Yearley (1992). Epistemological Chicken. Science as Practice and Culture. A. Pickering. Chicago, University of Chicago Press.
- Colson, E. (2000). "The Father as Witch." Africa: Journal of the International African Institute 70(3): 333-358.
- Colson, E. (2004). *Leza into God: God into Leza. Religion and Education in Zambia*. B. Carmody. Ndola, Mission Press.
- Coly, A. and P. M. Gorbach (2008). "Microbicide acceptability research: recent findings and evolution across phases of product development." Current Opinion in HIV and AIDS 3: 581-596.
- Comaroff, J. and J. L. Comaroff (1999). "Occult economies and the violence of abstraction: notes from the South African post-colony." American Ethnologist 26: 279-303.
- Connell, R. W. (1987). Gender and Power. Cambridge, Polity Press.
- Conrad, P. (2005). "The Shifting Engines of Medicalization." Journal of Health and Social Behavior 46(1): 3-14.
- Conrad, P. (2007). The Medicalisation of Society. Baltimore, Johns Hopkins University Press.
- Corea, G. (1985). The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs. New York, Harper and Row.
- Corea, G. (1987). Man-Made Woman: How the New Reproductive Technologies Affect Women. Bloomington, Indiana University Press.
- Corrigan, O. (2003). "Empty ethics: the problem with informed consent." Sociology of Health & Illness 25(3): 768-792.
- Cowan, R. S. (1987). The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology. The social construction of technological systems: new directions in the sociology and history of technology. W. E. Bijker, T. P. Hughes and T. Pinch. Cambridge, MIT Press: 261-280.
- Cutler, B. and J. Justman (2008). "Vaginal microbicides and the prevention of HIV transmission." Lancet Infectious Diseases 8(11): 685-697.

- Danaher, G., T. Schirato and J. Webb (2000). Understanding Foucault. London, Sage.
- de Laet, M. (2000). "Patents, travel, space: ethnographic encounters with objects in transit." Environment and Planning D-Society & Space **18**(2): 149-168.
- de Laet, M. and A. Mol (2000). "The Zimbabwe Bush Pump: Mechanics of a Fluid Technology." Social Studies of Science **30**: 225-263.
- de Vries, G. (1995). "Should We Send Collins and Latour to Dayton, Ohio?" EASST Review **14**(4).
- Department for International Development (2010) "DFID Research4Development Project Record "
<http://www.research4development.info/SearchResearchDatabase.asp?ProjectID=50081>.
- DeVault, M. L. (1995). "Ethnicity and Expertise: Racial-Ethnic Knowledge in Sociological Research." Gender and Society **9**(5): 612-631.
- Deveaux, M. (1994). "Feminism and Empowerment: A Critical Reading of Foucault." Feminist Studies **20**(2): 223-247.
- di Gregorio, S. and J. Davidson (2008). Qualitative Research Design for Software Users. Maidenhead, Open University Press.
- Diamond, I. and L. Quinby (1988). Feminism and Foucault: Reflections on Resistance. Evanston, Il, Northeastern University Press.
- Diseger, P. (1994). "Performativity Trouble: Postmodern Feminism and Essential Subjects." Political Research Quarterly **47**: 655-673.
- Dover, P. (2005). Gender and Embodiment: Expectations of Manliness in a Zambian Village. African Masculinities. L. Ouzgane and R. Morrell. New York, Palgrave Macmillan.
- Dristas, L. S. (2003). "Book Review: Science and Society in Southern Africa, edited by Saul Dubow." Science, Technology, & Human Values **28**: 331-334.
- Duggan, L. and N. D. Hunter (1995). Sex Wars: Sexual Dissent and Political Culture. New York, Routledge.
- Dunkle, K., R. Jewkes, H. Brown, G. Gray, J. A. McIntyre and S. Harlow (2004). "Gender-based violence, relationship power, and risk of prevalent HIV infection in women attending antenatal clinics in Soweto, South Africa." Lancet **363**: 1415-1421.

- Eckholm, E. (1985). Prostitutes' impact on spread of AIDS is developed. New York Times. New York.
- Ehrenreich, B. and D. English (1979). For Her Own Good: 150 Years of the Experts' Advice to Women London, Pluto Press.
- Ehrhardt, A. A., S. Sawires, T. McGovern, D. Peacock and M. Weston (2009). "Gender, Empowerment, and Health: What Is It? How Does It Work?" Aids-Journal of Acquired Immune Deficiency Syndromes **51**: S96-S105.
- Elias, C. and C. Coggins (2001). "Acceptability research on female-controlled barrier methods to prevent heterosexual transmission of HIV: Where have we been? Where are we going?" Journal of Womens Health & Gender-Based Medicine **10**(2): 163-173.
- Elias, C. and L. Heise (1994). "Challenges for the development of female controlled vaginal microbicides." AIDS **8**(1): 1-9.
- Ellison, G., M. Parker and C. Campbell (2003). Learning from HIV and AIDS. Cambridge, Cambridge University Press.
- Epstein, S. (1995). "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials." Science, Technology, & Human Values **20**(4): 408-437.
- Epstein, S. (1996). Impure Science: AIDS, Activism, and the Politics of Knowledge. Berkeley, CA, University of California Press.
- Esposito, N. (2001). "From Meaning to Meaning: The Influence of Translation Techniques on Non-English Focus Group Research." Qualitative Health Research **11**: 568-579.
- Essof, S. (2001). "African Feminisms: Histories, Applications and Prospects." Agenda **50**: 124-127.
- European Study Group on Heterosexual Transmission of HIV (1992). "Comparison of female to male and male to female transmission of HIV in 563 stable couples." BMJ **304**: 809-813.
- Fairclough, N. (2005). Governance, partnership and participation: cooperation and conflict, Unpublished paper given at the conference of the International Association for Dialogue Analysis, Bucharest.

- Fairhead, J., M. Leach and M. Small (2006). "Where techno-science meets poverty: Medical research and the economy of blood in The Gambia, West Africa." Social Science & Medicine **63**: 1109-1120.
- Falen, D. J. (2008). "The "Other" Gender? Reflections on Fieldwork in Benin." Men and Masculinities **11**(2): 164-173.
- Farquhar, C., J. N. Kiarie, B. A. Richardson, et al. (2004). "Antenatal couple counseling increases uptake of interventions to prevent HIV-1 transmission." Jaids-Journal of Acquired Immune Deficiency Syndromes **37**(5): 1620-1626.
- Farquhar, C., D. A. Mbori-Ngacha, R. K. Bosire and et al. (2001). "Partner notification by HIV-1 seropositive pregnant women: association with infant feeding decisions." AIDS **15**: 815-817.
- Faulkner, W. and E. Arnold (1985). Smothered by Invention. London, Pluto Press.
- Feldman-Savelsberg, P., F. T. Ndonko and B. Schmidt-Ehry (2000). "Sterilizing vaccines or the politics of the womb: retrospective study of rumour in Cameroon." Medical Anthropology Quarterly **14**: 159-179.
- Fenton, L. (2004). "Preventing HIV/AIDS through poverty reduction: the only sustainable solution." The Lancet **364**: 1186-1187.
- Fisher, J. A. (2007). ""Ready-to-recruit" or "Ready-to-consent" populations? - Informed consent and the limits of subject autonomy." Qualitative Inquiry **13**(6): 875-894.
- Fisher, J. A. (2009). Medical Research for Hire. The Political Economy of Pharmaceutical Clinical Trials New Brunswick, NJ and London, Rutgers University Press.
- Fitzgerald, M. (2005). "Corporate Ethnography." MIT Technology Review **17**.
- Forbes, A. (2006). "Microbicides for HIV Prevention " Bulletin of Experimental Treatments for AIDS (BETA) **Summer 2006**: 37-41.
- Foucault, M. (1975). The Birth of the Clinic: An Archaeology of Medical Perception. New York, Vintage Books.
- Foucault, M. (1977). Discipline and Punish: The Birth of the Prison. London, Allen Lane.
- Foucault, M. (1978). "Politics and the Study of Discourse." Ideology and Consciousness **3**: 7-26.
- Foucault, M. (1979). The History of Sexuality, Volume 1, An Introduction. New York, Vintage.

- Foucault, M. (1980a). Herculine Barbin, Being the Recently Discovered Memoirs of a Nineteenth-Century Hermaphrodite. New York, Colophon.
- Foucault, M. (1980b). The History of Sexuality, Volume 1, An Introduction. New York, Vintage.
- Foucault, M. (1980c). Power/Knowledge: Selected Interviews and Other Writings 1972-1977. London, Harvester Press.
- Foucault, M. (1980d). Truth and Power. Power/Knowledge: Selected Interviews and Other Writings, 1972-1977. Brighton, Harvester.
- Foucault, M. (1980e). Two lectures. Power/Knowledge: Selected Interviews and Other Writings, 1972-1977. C. Gordon. Brighton, Harvester: 96-108.
- Foucault, M. (1984). Truth and Power. The Foucault Reader. P. Rabinow. New York, Pantheon Books.
- Foucault, M. (1988). Technologies of the Self. Technologies of the Self. A Seminar with Michel Foucault. L. H. Martin, H. Gutman and P. H. Hutton. Amherst: 16-49.
- Foucault, M. (1991). Governmentality. The Foucault Effect: Studies in Governmentality. G. Burchell, C. Gordon and P. Miller. Chicago, Chicago University Press.
- Foucault, M. (1996). How Much Does it Cost for Reason to Tell the Truth. Foucault Live: Collected Interviews, 1961-1984. S. Lotringer. New York, Semiotexte.
- Foucault, M. (1997). Technologies of the Self. Ethics, Subjectivity and Truth: Essential Works of Foucault 1954-1984. P. Rabinow. New York, New Press.
- Fowler, A. (1998). "Authentic NGDO Partnerships in the New Policy Agenda for International Aid: Dead End or Light Ahead?" Development and Change **28**(1): 137-159.
- Fraser, N. (1995). False Antitheses: A Response to Sayla Benhabib and Judith Butler. Feminist Contentions: A Philosophical Exchange. S. Benhabib, J. Butler, D. Cornell, N. Fraser and L. Nicholson. New York & London, Routledge: 59-74.
- Fraser, S., K. Valentine and C. Roberts (2009). "Living Drugs." Science as Culture **18**(2): 123-131.
- Friend, D. R. (2009). "Pharmaceutical Development of Microbicide Drug Products." Pharmaceutical Development and Technology doi: **10.3109/10837450903369879**.

- Fujimara, J. (1992). *Crafting Science: Standardized Packages, Boundary Objects, and "Translation"*. Science as Practice and Culture. A. Pickering. Chicago, University of Chicago Press.
- Gaillard, J. F. (1994). "North-south research partnership: is collaboration possible between unequal partners?" Knowledge, Technology and Policy 7(2): 31-63.
- Galison, P. (1997). Image & Logic: A Material Culture of Microphysics. Chicago, University of Chicago Press.
- Gallagher, M. (2006). Foucault, power and participation. Edinburgh, Unpublished paper, School of Social and Political Studies.
- Garcia-Calleja, J. M., E. Gouws and P. D. Ghys (2006). "National population based HIV prevalence surveys in sub-Saharan Africa: results and implications for HIV and AIDS estimates." Sexually Transmitted Infections 82(Suppl. 3): iii64-iii70.
- Garcia-Moreno, C. and C. Watts (2000). "Violence against women: its importance for HIV/AIDS." AIDS 14(Suppl. 3): S253-S265.
- Garg, A. B., J. Nuttall and J. Romano (2009). "The future of HIV microbicides: challenges and opportunities." Antivir Chem Chemother. 19(4): 143-150.
- Gausset, Q. (2001). "AIDS and cultural practices in Africa: the case of the Tonga (Zambia)." Social Science & Medicine 52: 509-518.
- Geissler, P. W. (2004). "Blood-stealing rumours in rural western Kenya: a local critique of medical research in its wider context." MILA (Nairobi) 5: 76-90
- Geissler, P. W. (2005). "Kachinga are coming: Encounters around a medical research project in a Kenyan village." Africa: Journal of the International African Institute 75(2): 173-202.
- Geissler, P. W. and R. Pool (2006). "Editorial: Popular concerns about medical research projects in sub-Saharan Africa - a critical voice in debates about medical research ethics." Tropical Medicine & International Health 11(7): 975-982.
- Ghys, P. D., E. Kufa, M. V. George, for the UNAIDS Reference Group on Estimates and infection in countries with generalised epidemics (2006). "Measuring trends in prevalence and incidence of HIV infection in countries with generalised epidemics." Sexually Transmitted Infections 82(Suppl 1): i52-i56.
- Gieryn, T. F. (1983). "Boundary-work and the demarcation of science from non-science: strains and interests in professional ideologies of scientists." American Sociological Review 48: 781-795.

- Gieryn, T. F. (1999). Cultural Boundaries of Science: Credibility on the Line. Chicago, University of Chicago Press.
- Gillespie, S., R. Greener, A. Whiteside and J. Whitworth (2007). "Investigating the empirical evidence for understanding vulnerability and the associations between poverty, HIV infection and AIDS impact." AIDS 21(Suppl 7): S1-S4.
- Glaser, B. G. and A. L. Strauss (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. New York, Aldine.
- Global Campaign for Microbicides (2005). Rethinking the Ethical Roadmap for Clinical Testing of Microbicides: Report on an International Consultation.
- Global Campaign for Microbicides (2007) "Who's Who in the Microbicides Field: An Annotated Summary."
- Golinsky, J. (1998). Making Natural Knowledge: Constructivism and History of Science. Cambridge, Cambridge University Press.
- Gouws, E., K. Stanekki, R. Lyerla and P. D. Ghys (2008). "The epidemiology of HIV infection among young people aged 15-24 years in southern Africa." AIDS 22(Supp. 4): S5-S16.
- Gramsci, A. (1971). Selections from the Prison Notebooks. London, Lawrence and Wishart.
- Gray, R. H., G. Kigozi, D. Serwadda, et al. (2007). "Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial " Lancet 369(9562): 657-666.
- Green, G. and L. Hart (1999). The impact of context on data. Developing Focus Group Research: Politics, Theory and Practice. R. Barbour and J. Kitzinger. London, Sage: 21-35.
- Green, J. (1998). "Commentary: Grounded theory and the constant comparative method." British Medical Journal 316(7137): 1064-1065.
- Green, J. and N. Thorogood (2009). Qualitative Methods for Health Research. London, Sage.
- Griffin, S. (1984). Woman and Nature: The Roaring Inside Her. London, The Women's Press.
- Grimshaw, J. (1993). Practices of Freedom. Up Against Foucault. Explorations of Some Tensions between Foucault and Feminism. C. Ramazanoglu. London and New York, Routledge.

- Grint, K. and R. Gill (1995). The Gender-Technology Relation. Contemporary Theory and Research. London, Taylor & Francis.
- Grint, K. and S. Woolgar (1995). "On Some Failures of Nerve in Constructivist and Feminist Analyses of Technology." Science, Technology, & Human Values 20(3): 286-310.
- Gurunathan, S., R. E. Habib, L. Baglyos, et al. (2009). "Use of predictive markers of HIV disease progression in vaccine trials." Vaccine 27(14): 1997-2015.
- Hackett, E. J. (2005). "Essential Tensions: Identity, Control, and Risk in Research." Social Studies of Science 35: 787-826.
- Hacking, I. (1999). The Social Construction of What? Cambridge MA, Harvard University Press.
- Hall, W. A. and P. Callery (2001). "Enhancing the Rigor of Grounded Theory: Incorporating Reflexivity and Relationality." Qualitative Health Research 11: 257-272.
- Hallman, K. (2004). Socioeconomic disadvantage and unsafe sexual behaviors among young women and men in South Africa. Policy research division working paper no. 190. New York, Population Council.
- Harding, S. (1991). Whose Science? Whose Knowledge? Buckingham, Open University Press.
- Hartmann, J. (2003). Power and Resistance in the Later Foucault. 3rd Annual Meeting of the Foucault Circle, John Carroll University, Cleveland, OH.
- Harvey, S. M. and S. T. Bird (2004). "What makes women feel powerful? An exploratory study of relationship power and sexual decision-making with African Americans at risk for HIV/STDs." Women & Health 39(3): 1-18.
- Hawkesworth, M. E. (1989). "Knowers, Knowing, Known: Feminist Theory and Claims of Truth." Signs: Journal of Women in Culture and Society 14(3): 533-557.
- Heise, L. and C. Elias (1995). "Transforming AIDS Prevention to Meet Women's Needs: A Focus on Developing Countries." Social Science & Medicine 40(7): 931-943.
- Hekman, S. (1990). Gender and Knowledge: Elements of Postmodern Feminism. Cambridge, Polity Press.

- Hess, D. J. (2001). Ethnography and the development of science and technology studies. Sage Handbook of Ethnography. P. Atkinson, A. Coffey, S. Delamont, J. Lofland and L. Lofland. Thousand Oaks, CA, Sage: 234-245.
- Hilber, A. M., T. H. Hull, E. Preston-Whyte, et al. (2010). "A cross cultural study of vaginal practices and sexuality: Implications for sexual health." Social Science & Medicine 70(3): 392-400.
- Hilleman, M. R. (1995). "Whether and when an AIDS vaccine?" Nature Medicine 1(11): 1126-1129.
- Hine, C. (2007). "Multi-sited ethnography as a middle range methodology for contemporary STS." Science Technology & Human Values 32(6): 652-671.
- Hirschauer, S. and A. Mol (1995). "Shifting Sexes, Moving Stories: Feminist/Constructivist Dialogues." Science Technology Human Values 20(3): 368-385.
- Homsy, J., R. King, S. S. Malamba, et al. (2007). "The need for partner consent is a main reason for opting out of routine HIV testing for prevention of mother-to-child transmission in a rural Ugandan hospital." Jaids-Journal of Acquired Immune Deficiency Syndromes 44(3): 366-369.
- Horton, R. (2003). "AIDS: The elusive vaccine." New York Rev Books 51(14): 53-58.
- Horton, R. and P. Das (2008). "Putting prevention at the forefront of HIV/AIDS." Lancet 372(9637): 421-422.
- Howson, A. (2005). Embodying Gender. London, Sage.
- Hughes, J., D. Randall and D. Shapiro (1993). "From Ethnographic Record to System Design: Some Experiences from the Field." Computer Supported Cooperative Work 1(3): 123-141.
- Imrie, J., J. Elford, S. Kippax and G. J. Hart (2007). "Biomedical HIV prevention-and social science." The Lancet 370(9581): 10-11.
- IRMA/Global Campaign for Microbicides joint Teleconference (2009). Microbicides: The Herstory of a Movement.
- Jankowski, N. W. (2007). "Exploring e-Science: An Introduction." Journal of Computer-Mediated Communication 12: 549-562.
- Jasanoff, S. (1996). "Beyond Epistemology: Relativism and Engagement in the Politics of Science." Social Studies of Science 26: 393-418.

- Jasanoff, S. (2006). States of knowledge. The co-production of science and social order. London & New York, Routledge.
- Jentsch, B. and C. Pilley (2003). "Research relationships between the South and the North: Cinderella and the ugly sisters?" Social Science & Medicine **57**: 1957-1967.
- Jewkes, R., M. Nduna, P. N. Jama and J. B. Levin (2002). Measuring relationship power: adaptation of the SRPS for South Africa. XIV International AIDS Conference, Barcelona, Spain.
- Johnson, H. and G. Wilson (2006). "North-South/South-North Partnerships: Closing the 'Mutuality Gap'." Public Administration and Development **26**: 71-80.
- Jolly, S. (2007). Why the Development Industry Should Get Over its Obsession with Bad Sex and Start to Think About Pleasure (IDS Working Paper 283). Brighton, Institute of Development Studies.
- Jones, C. and R. Porter (1994). Reassessing Foucault. Power, Medicine and the Body. London and New York, Routledge.
- Jukesa, M., S. Simmonsa and D. Bundy (2008). "Education and vulnerability: the role of schools in protecting young women and girls from HIV in southern Africa." AIDS **22**(suppl 4): S41-S56.
- Kaiser Family Foundation (2009). The Global HIV/AIDS Epidemic Fact Sheet. Washington.
- Kakimoto, K., K. Kanai, Y. Mukoyama, T. V. Chheng, T. L. Chou and C. Sedtha (2007). "Influence of the involvement of partners in the mother class with voluntary confidential counselling and testing acceptance for Prevention of Mother to Child Transmission of HIV Programme (PMTCT Programme) in Cambodia." Aids Care-Psychological and Socio-Medical Aspects of Aids/Hiv **19**(3): 381-384.
- Kaler, A. (2001). "'It's some kind of women's empowerment': the ambiguity of the female condom as a marker of female empowerment." Social Science & Medicine **52**(5): 783-796.
- Kalumbilo, S., M. Chilatu, B. Mwanza and M. Musonda (2006). An exploratory study assessing the acceptability of male research assistants administering coital diaries and conducting in-depth interviews. Unpublished report. Mazabuka, MDP Zambia.

- Kamenga, M., R. W. Ryder, M. Jingu, et al. (1991). "Evidence of marked sexual behavior change associated with low HIV-1 seroconversion in 149 married couples with discordant HIV-1 serostatus: experience at an HIV counselling centre in Zaire." AIDS 5: 61-67.
- Kandiyoti, D. (1988). "Bargaining with Patriarchy." Gender & Society 2(3): 274-290.
- Kapur, R. (2003). "The tragedy of victimization rhetoric: resurrecting the "native" subject in international/post-colonial feminist legal politics." Harvard Human Rights Journal 15(11): 36.
- Karpp, A. (1987). Recent Feminist Approaches to Women and Technology. Gender and Expertise. M. McNeill. London, Free Association Books.
- Kelle, U. and H. Laurie (1995). Computer use in qualitative research and issues of validity. Computer-Aided Qualitative Data Analysis: Theory, Methods and Practice. U. Kelle. London, Sage.
- Kelly, J. A. (1999). "Community-level interventions are needed to prevent new HIV infections." American Journal of Public Health 89: 299-301.
- Kent, J., E. Williamson, T. Goodenough and R. Ashcroft (2002). "Social science gets the ethics treatment: research governance and ethical review." Sociological Research Online 7(4).
- Kiarie, J. N., J. K. Kreiss, B. A. Richardson and et al. (2003). "Compliance with antiretroviral regimens to prevent perinatal HIV-1 transmission in Kenya." AIDS 17: 65-71.
- Kincheloe, J. L. and P. L. McLaren (1994). Rethinking Critical Theory and Qualitative Research. Handbook of Qualitative Research. N. K. Denzin and Y. S. Lincoln. Thousand Oaks, Sage Publications.
- Kirkpatrick, E. M. (1983). Chambers 20th Century Dictionary. Edinburgh, Chambers.
- Kitzinger, C. (2004). Feminist Approaches. Qualitative Research Practice. C. Seale, G. Gobo, J. Gubrium and D. Silverman. London, Sage: 125-140.
- Kitzinger, J. (1994). "The methodology of Focus Groups: the importance of interaction between research participants." Sociology of Health & Illness 16(1): 103-121.
- Knorr-Cetina, K. (1981). The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science. Oxford, Pergamon.
- Knorr-Cetina, K. (1996). Epistemic Cultures: How Scientists Make Science. Cambridge, MA, Harvard University Press.

- Knorr-Cetina, K. (1999). Epistemic Cultures: How the Sciences Make Knowledge. Cambridge, MA, Harvard University Press.
- Kreinberg, N. and E. K. Stage (1983). EQUALS in computer technology. The technological woman: Interfacing with tomorrow. J. Zimmerman. New York, Praeger.
- Kreiss, J. K., D. Koech, F. A. Plummer, et al. (1986). "AIDS virus infection in Nairobi prostitutes. Spread of the epidemic to East Africa." N Engl J Med **314**(7): 414-418.
- Kuhn, T. S. (1962). The Structure of Scientific Revolutions. Chicago, University of Chicago Press.
- Lagakos, S. and A. Gable (2008). Methodological Challenges in Biomedical HIV Prevention Trials. Washington DC, National Academies Press.
- Lal, J. (1999). Situating locations: The politics of self, identity, and 'Other' in living and writing the text. Feminist Approaches to Theory and Methodology: An Interdisciplinary Reader. S. Hesse-Biber, C. Gilmartin and R. Lydenberg. Oxford, Oxford University Press: 100-137.
- Latour, B. (1987). Science in Action. Cambridge, MA, Harvard University Press.
- Latour, B. (2004). "Why has critique run out of steam? From matters of fact to matters of concern." Critical Inquiry **30**: 225-248.
- Latour, B. (2005). Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford, Oxford University Press.
- Latour, B. and S. Woolgar (1986). Laboratory Life: The Construction of Scientific Facts. Princeton, N.J., Princeton University Press.
- Law, J. (1991). Introduction: Monsters, Machines and Sociotechnical Relations. A Sociology of Monsters: Essays on Power, Technology and Domination. J. Law. London, Routledge: 1-23.
- Law, J. (1992). "Notes on the Theory of the Actor-Network: Ordering, Strategy and Heterogeneity." Systems Practice **5**: 379-393.
- Law, J. (1994). Organizing Modernity. Oxford, Blackwell.
- Law, J. (2004). After Method. Mess in Social Science Research. London & New York, Routledge.

- Law, J. (2007). "Actor Network Theory and Material Semiotics, version of 25th April 2007." <http://www.heterogeneities.net/publications/Law-ANTandMaterialSemiotics.pdf>.
- Law, J. and A. Mol (2001). "Situating technoscience: an inquiry into spatialities." Environment and Planning D-Society & Space **19**(5): 609-621.
- Law, J. and J. Urry (2003). *Enacting the Social*. Lancaster, Department of Sociology at the Centre for Science Studies, Lancaster University.
- Lewis, D. (1998). "Development NGOs and the challenge of partnership: Changing relations between north and south." Social Policy and Administration **32**: 501-512.
- Lynch, M. (2008). "Editorial." Social Studies of Science **38**(1): 5-6.
- MacCormack, C. and M. Strathern (1980). Nature, Culture, and Gender. Cambridge, Cambridge University Press.
- Macleod, C. (2006). "Radical Plural Feminisms and Emancipatory Practice in Post-Apartheid South Africa." Theory & Psychology **16**(3): 367-389.
- Mankayi, N. (2008). "Morality and sexual rights: constructions of masculinity, femininity and sexuality among a group of South African soldiers." Culture Health & Sexuality **10**(6): 625-634.
- Mantell, J. E., L. Myer, A. Carballo-Diequez, et al. (2005). "Microbicide acceptability research: current approaches and future directions." Social Science & Medicine **60**(2): 319-330.
- Mantell, J. E., Z. A. Stein and I. Susser (2008). "Women in the time of AIDS: Barriers, bargains, and benefits." AIDS Education and Prevention **20**(2): 91-106.
- Marshall, B. L. (2009). "Sexual Medicine, Sexual Bodies and the 'Pharmaceutical Imagination'." Science as Culture **18**(2): 133-149.
- Martin, B., E. Richards and P. Scott (1991). "Who's a Captive? Who's a Victim? Response to Collins' Method Talk." Science, Technology, & Human Values **16**(2): 252-255.
- Martin, E. (1994). Flexible Bodies: Tracking Immunity in American Culture from the Days of Polio to the Age of AIDS. Boston, MA, Beacon Press.
- Martin, E. (1998). "Anthropology and the Cultural Study of Science." Science, Technology, & Human Values **23**(1): 24-44.

- May, C. (2006). "Mobilising modern facts: health technology assessment and the politics of evidence." Sociology of Health & Illness **28**(5): 513-532.
- May, C. and N. Ellis (2001). "When protocols fail: technical evaluation, biomedical knowledge, and the social production of 'facts' about a telemedicine clinic." Social Science & Medicine **53**: 989-1002.
- Maynard-Tucker, G. (2000). "Conducting Focus Groups in Developing Countries: Skill Training for Local Bilingual Facilitators." Qualitative Health Research **10**: 396-410.
- McClure, M. O., J. P. Moore, D. F. Blanc, et al. (1992). "Investigations into the mechanism by which sulfated polysaccharides inhibit HIV infection in vitro." AIDS Res Hum Retroviruses **8**: 19-26.
- McCormack, S., R. Hayes, C. J. N. Lacey and A. M. Johnson (2001). "Science, medicine, and the future: Microbicides in HIV prevention." BMJ **322**: 410-413.
- McGowan, I. (2008). "Rectal microbicides: a new focus for HIV prevention." Sexually Transmitted Infections **84**: 413-417.
- McKegany, N. and M. Bloor (1991). "The Invisible Man: The Influence of Male Gender on Fieldwork Relations." The British Journal of Sociology **42**(2): 195-210.
- McNay, L. (1991). "The Foucauldian Body and the Exclusion of Experience." Hypatia **6**(3): 125-140.
- McNay, L. (1992). Foucault and Feminism. Cambridge, Polity Press.
- McNay, L. (1999). "Subject, Psyche and Agency." Theory, Culture & Society **16**(2): 175-193.
- Medical Research Council. (2009). "Infections and Immunity Board (IIB) Programme." Retrieved 27/02/09, from <http://www.mrc.ac.uk/Ourresearch/Boardpanelsgroups/IIB/Programme/index.htm>.
- Meena, R. (1992). Gender Research/Studies in Southern Africa: An Overview. Gender in Southern Africa: Conceptual and Theoretical Issues. R. Meena. Harare, SAPES Books: 1-30.
- Mellström, U. (2009). "The Intersection of Gender, Race and Cultural Boundaries, or Why is Computer Science in Malaysia Dominated by Women?" Social Studies of Science **39**: 885-907.

- Merson, M. H., O. O'Malley, D. Serwadda and C. Apisuk (2008). "The history and challenge of HIV prevention." Lancet **372**(9637): 475-488.
- Mias, C. and R. Webb (2006). Working in Europe to Make Microbicides a Reality, International Partnership for Microbicides & Global Campaign for Microbicides. Microbicides Development Programme. (2009). "HIV 'prevention' gel PRO 2000 proven ineffective." <http://www.mdp.mrc.ac.uk/archive.html>.
- Mies, M. (1987). Why Do We Need All This? A Call Against Genetic Engineering and Reproductive Technology. Made to Order: The Myth of Reproductive and Genetic Progress. P. Spallone and D. Steinberg. Oxford, Pergamon Press.
- Milimo, M. C., M. L. Munachonga, L. Mushota, N. Nyangu and A. Ponga (2004). Zambia Strategic Country Gender Assessment. A Report of the World Bank., World Bank.
- Miller, T. and L. Bell (2002). Consenting to what? Issues of access, gatekeeping and 'informed' consent. Ethics in Qualitative Research. M. Mauthner, M. Birch, J. Jessop and T. Miller. London, Sage.
- Mohanty, C. T. (1991). Under Western eyes: feminist scholarship and colonial discourses. Third World Women and the Politics of Feminism. C. T. Mohanty, A. Russo and L. Torres. Bloomington/Indianapolis, Indiana University Press: 51-80.
- Moi, T. (1985). "Power, sex and subjectivity: feminist reflections on Foucault." Paragraph **5**: 95-102.
- Mol, A. (2003). The body multiple: Ontology in medical practice. Durham, Duke University Press.
- Montgomery, C. M., V. Hosegood, J. Busza and I. Timaeus (2006). "Men's involvement in the South African family: Engendering change in the AIDS era." Social Science & Medicine **62**: 2411-2419.
- Montgomery, C. M., S. Lees, J. Stadler, et al. (2008). "The Role of Partnership Dynamics in Determining the Acceptability of Condoms and Microbicides." AIDS Care **20**(6): 733-740.
- Moore, H. (1988). Feminism and Anthropology. Cambridge, Polity Press.
- Moore, H. (1994). A Passion for Difference. Essays in Anthropology and Gender. Cambridge, Polity Press.

- Moore, L. J. (1997). "'It's Like You Use Pots and Pans to Cook. It's the Tool': The Technologies of Safer Sex." Science, Technology, & Human Values **22**(4): 434-471.
- Morrell, R. (1998). "Of boys and men: Masculinity and gender in Southern African studies." Journal of Southern African Studies **24**(4): 605-630.
- Morrell, R. and L. Ouzgane (2005). African Masculinities: An Introduction. African Masculinities. L. Ouzgane and R. Morrell. New York, Palgrave Macmillan.
- Mort, M., T. Finch and C. May (2009). "Making and Unmaking Telepatients: Identity and Governance in New Health Technologies." Science, Technology, & Human Values **34**(1): 9-33.
- Mort, M., C. May, T. Finch and F. Mair (2004). Telemedicine and Clinical Governance: Controlling Technology, Containing Knowledge. Governing Medicine: Theory and Practice. A. Gray and S. Harrison. Maidenhead, Open University Press: 107-121.
- Moynihan, R. and A. Cassels (2005). Selling Sickness: How the World's Biggest Pharmaceutical Companies Are Turning Us All Into Patients. New York, Nation Books.
- Msuya, S. E., E. Mbizvo, J. Uriyo, B. Stray-Pedersen, N. E. Sam and A. Hussain (2006). "Predictors of failure to return for HIV test results among pregnant women in Moshi, Tanzania." AIDS-Journal of Acquired Immune Deficiency Syndromes **43**(1): 85-90.
- Mullany, B. C., S. Becker and M. J. Hindin (2007). "The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: results from a randomized controlled trial." Health Education Research **22**(2): 166-176.
- Mullany, B. C., M. J. Hindin and S. Becker (2005). "Can women's autonomy impede male involvement in pregnancy health in Katmandu, Nepal?" Social Science & Medicine **61**(9): 1993-2006.
- Mumtaz, Z. and S. Salway (2007). "Gender, pregnancy and the uptake of antenatal care services in Pakistan." Sociology of Health & Illness **29**(1): 1-26.
- Mumtaz, Z. and S. Salway (2009). "Understanding gendered influences on women's reproductive health in Pakistan: Moving beyond the autonomy paradigm." Social Science & Medicine **68**(7): 1349-1356.

- Mykhalovskiy, E. and M. Rosengarten (2009). "HIV/AIDS in its third decade: Renewed critique in social and cultural analysis - An introduction." Soc Theory Health 7(3): 187-195.
- Nedelsky, J. (1989). "Reconceiving autonomy: sources, thoughts and possibilities." Yale Journal of Law and Feminism 1: 7-36.
- NEPAD (2001). The New Partnership for Africa's Development. Pretoria, Government Printer.
- Nettleton, S. (1989). "Power and pain: the location of pain and fear in dentistry and the creation of a dental subject." Social Science & Medicine 29: 1183-1190.
- Nettleton, S. (1994). Inventing Mouths: Disciplinary Power and Dentistry. Reassessing Foucault. Power, Medicine and the Body. C. Jones and R. Porter. London and New York, Routledge.
- Nicolosi, A., M. L. Correa Leite, M. Musicco, C. Arici, G. Gavazzeni and A. Lazzarin (1994). "The efficiency of male-to-female and female to-male sexual transmission of the human immunodeficiency virus: a study of 730 stable couples. Italian Study Group on HIV Heterosexual Transmission." Epidemiology 5: 570-575.
- Nnaemeka, O. (1998). Sisterhood, Feminisms and Power: From Africa to the Diaspora. Trenton, NJ/Asmara, African World Press.
- Nunn, A., S. McCormack, A. M. Crook, R. Pool, C. Rutterford and R. Hayes (2009). "Microbicides Development Programme: Design of a phase III trial to measure the efficacy of the vaginal microbicide PRO 2000/5 for HIV prevention." Trials 10: 99.
- Nunn, A., S. McCormack, A. M. Crook, R. Pool, C. Rutterford and R. Hayes (2009). "Microbicides Development Programme: Design of a phase III trial to measure the efficacy of the vaginal microbicide PRO 2000/5 for HIV prevention." Trials 10(99).
- O'Brien, T. R., M. P. Busch, E. Donegan, et al. (1994). "Heterosexual transmission of human immunodeficiency virus type 1 from transfusion recipients to their sex partners." J Acquir Immune Defic Syndr 7: 705-710.
- Oakley, A. (2000). Experiments in Knowing. Gender and Method in the Social Sciences. New York, The New Press.

- Office for National Statistics (2009) "News Release: UK population grows to 61.4 million."
- Oksala, J. (2005). Foucault on Freedom. Cambridge, Cambridge University Press.
- Ormrod, S. (1994). 'Let's nuke the dinner': Discursive practices of gender in the creation of a new cooking process. Bringing Technology Home. Gender and Technology in a Changing Europe. C. Cockburn and F. R. Dilic. Buckingham, Open University Press: 42-58.
- Ormrod, S. (1995). Feminist Sociology and Methodology: Leaky Black Boxes in Gender/Technology Relations. the Gender-Technology Relation. K. Grint and R. Gill. London, Taylor & Francis.
- Ortner, S. B. (1996). Making gender. The politics and the erotics of culture. Boston, Beacon.
- Ortner, S. B. and H. Whitehead (1981). Sexual Meanings. The Cultural Construction of Gender and Sexuality. Cambridge, Cambridge University Press.
- Padian, N. (1988). "Prostitute women and AIDS: epidemiology." AIDS 2(6): 413-419.
- Padian, N. S., T. R. O'Brien, Y. Chang, S. Glass and D. P. Francis (1993). "Prevention of Heterosexual Transmission of Human Immunodeficiency Virus Through Couple Counseling." Journal of Acquired Immune Deficiency Syndromes 6(9): 1043-1048.
- Painter, T. M. (2001). "Voluntary counseling and testing for couples: a high leverage intervention for HIV/AIDS prevention in sub-Saharan Africa." Social Science & Medicine 53: 1397-1411.
- Parker, M. (2007). "Ethnography/ethics." Social Science & Medicine 65: 2248-2259.
- Parker, R. G., D. Easton and C. H. Klein (2000). "Structural barriers and facilitators in HIV prevention: a review of international research." AIDS 14(Suppl. 1): S22-S32.
- Patton, C. (1990). Inventing AIDS. New York, Routledge.
- Patton, C. (1994). Last Served? Gendering the HIV Pandemic. London, Taylor & Francis.
- Peacock, D., L. Stemple, S. Sawires and T. J. Coates (2009). "Men, HIV/AIDS, and Human Rights." Journal of Acquired Immune Deficiency Syndromes 51(Supplement 3): S119-S125.
- Pels, D. (1996). "The Politics of Symmetry." Social Studies of Science 26: 277-304.

- Petersen, A. and R. Bunton (1997). Foucault, Health and Medicine. London, Routledge.
- Petryna, A. (2005). "Ethical variability: Drug development and globalizing clinical trials." American Ethnologist **32**(2): 183-197.
- Petryna, A. (2009). When Experiments Travel. Clinical Trials and the Global Search for Human Subjects. Princeton & Oxford, Princeton University Press.
- Petryna, A., A. Lakoff and A. Kleinman (2006). Global Pharmaceuticals: Ethics, Markets, Practices. Durham, NC, Duke University Press.
- Pettifor, A., D. M. Measham, H. Rees and N. S. Padian (2004). "Sexual Power and HIV Risk, South Africa." Emerging Infectious Diseases **10**(11): 1996-2004.
- Pharmaco-Economics Working Group of the Rockefeller Foundation Microbicide Initiative (2002). The Economics of Microbicide Development. A Case for Investment, Rockefeller Foundation.
- Pickering, A. (1992). Science as Practice and Culture. Chicago, University of Chicago Press.
- Pinch, T. (1993). "Turn, Turn, and Turn Again: the Woolgar Formula." Science, Technology, & Human Values **18**: 511-522.
- Pinch, T. and W. E. Bijker (1984). "The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other." Social Studies of Science **14**: 399-441.
- Piot, P., M. Bartos, H. Larson, D. Debrework Zewdie and P. Mane (2008). "Coming to terms with complexity: a call to action for HIV prevention." Lancet **372**(9641): 845-859.
- Pool, R. (1994). Dialogue and the Interpretation of Illness. Oxford/Providence, USA, Berg.
- Presser, L. (2005). "Negotiating power and narrative in research: implications for feminist methodology." Signs: Journal of Women in Culture and Society **30**(4): 2067-2090.
- Prins, B. (1995). "The Ethics of Hybrid Subjects: Feminist Constructivism According to Donna Haraway." Science Technology Human Values **20**(3): 352-367.
- Pronyk, P. M., J. R. Hargreaves, J. C. Kim, et al, (2006). "Effect of a structural intervention for the prevention of intimate partner violence and HIV in rural South Africa: a cluster randomized trial." Lancet **368**: 1973-1983.

- Prout, A. (1996). "Actor-network theory, technology and medical sociology: an illustrative analysis of the metered dose inhaler." Sociology of Health & Illness 18: 198-219.
- Pulerwitz, J., H. Amaro, W. De Jong, S. L. Gortmaker and R. Rudd (2002). "Relationship power, condom use and HIV risk among women in the USA." AIDS Care 14(6): 789-800.
- Quinn, T. C. and J. Overbaugh (2005). "HIV/AIDS in Women: An Expanding Epidemic" Science 308(5728): 1582 - 1583.
- Rabeharisoa, V. and M. Callon (2006). Patients and scientists in French muscular dystrophy research. States of Knowledge. The Co-Production of Science and Social Order. S. Jasanoff. London and New York, Routledge.
- Ragnarsson, A., H. E. Onya, A. Thorson, A. M. Ekstrom and L. E. Aaro (2008). "Young males' gendered sexuality in the era of HIV and AIDS in Limpopo Province, South Africa." Qualitative Health Research 18(6): 739-746.
- Ramazanoglu, C. (1993). Up Against Foucault. London & New York, Routledge.
- Rao Gupta, G. (2002). "How men's power over women fuels the HIV epidemic." BMJ 324: 183-184.
- Rasing, T. (2001). The bush burnt, the stones remain: female initiation rites in urban Zambia. Hamburg, LIT Verlag.
- Raymond, J. (1993). Women as Wombs: Reproductive Technologies and the Battle over Women's Freedom. New York, HarperCollins.
- Reaney, P. (2004). Expert: Face of AIDS Epidemic Is an African Woman July 6, 2004 London, Reuters NewMedia.
- Rich, A. (1977). Of Woman Born. London, Virago.
- Richards, L. and T. Richards (1994). From filing cabinet to computer. Analysing Qualitative Data. A. Bryman and R. G. Burgess. London, Routledge: 146-172.
- Rose, H. (1994). Love, Power and Knowledge. Cambridge, Polity Press.
- Rose, N. (1990). Governing the Soul: The Shaping of the Private Self. London Routledge.
- Rose, N. (1992). Governing the enterprising self. The Values of the Enterprise Culture. P. Heelas and P. Morris. London, Routledge.
- Rose, N. (1999). Powers of Freedom. Reframing Political Thought. Cambridge, Cambridge University Press.

- Rose, N. (2007). "Beyond medicalisation." Lancet **369**: 700-702.
- Rosenberg, M. J. and J. M. Weiner (1988). "Prostitutes and AIDS: a health department priority?" Am J Public Health **78**(4): 418-423.
- Rosengarten, M., J. Imrie, P. Flowers, M. D. Davis and G. Hart (2004). "After the euphoria: HIV medical technologies from the perspective of their prescribers." Sociology of Health & Illness **26**(5): 575-596.
- Rosengarten, M. and M. Michael (2009a). "The performative function of expectations in translating treatment to prevention: The case of HIV pre-exposure prophylaxis, or PrEP." Social Science & Medicine **69**(7): 1049-1055.
- Rosengarten, M. and M. Michael (2009b). "Rethinking the Biomedical Enactment of Medically Drugged Bodies: Paradoxes of Using Anti-HIV Drug Therapy as a Technology for Prevention." Science as Culture **18**(2): 183-199.
- Rosengarten, M., M. Michael, E. Mykhalovskiy and J. Imrie (2008). "The challenges of technological innovation in HIV." Lancet **372**: 357-358.
- Roth, D. L., K. E. Stewart, O. J. Clay, A. van der Straten, E. Karita and S. Allen (2001). "Sexual practices of HIV discordant and concordant couples in Rwanda: effects of a testing and counselling programme for men." International Journal of Std & Aids **12**(3): 181-188.
- Rowbotham, S. (1981). The Trouble with Patriarchy. People's History and Socialist Theory. R. Samuel. London, Routledge and Kegan Paul.
- Rowland, R. (1984). Reproductive technologies: the final solution to the woman question? Test Tube Women - What Future for Motherhood? R. Arditti. London, Pandora.
- Russell, S. (1986). "The Social Construction of Artefacts: a Response to Pinch and Bijker." Social Studies of Science **16**: 331-346.
- Salmon, A. (2007). "Walking the Talk: How Participatory Interview Methods Can Democratize Research." Qualitative Health Research **17**(7): 982-993.
- Sawicki, J. (1991). Disciplining Foucault. Feminism, Power and the Body. London and New York, Routledge.
- Sawicki, J. (1991). Disciplining Mothers: Feminism and the New Reproductive Technologies. Disciplining Foucault. Feminism, Power and the Body. J. Sawicki. London and New York, Routledge.

- Scambler, G. and F. Paoli (2008). "Health work, female sex workers and HIV/AIDS: Global and local dimensions of stigma and deviance as barriers to effective interventions " Social Science & Medicine **66**: 1848-1862.
- Scarce, M. (1999). "Beyond Condoms: Life After Latex." POZ.
- Schiller, N. G., S. Crystal and D. Lewellen (1994). "Risky Business: The Cultural Construction of AIDS Risk Groups." Social Science & Medicine **38**(10): 1337-1346.
- Schilt, K. and C. L. Williams (2008). "Access Denied." Men and Masculinities **11**(2): 219-226.
- Scott, P., E. Richards and B. Martin (1990). "Captives of Controversy: The Myth of the Neutral Researcher in Contemporary Scientific Controversies." Science, Technology, & Human Values **15**(4): 474-494.
- Segal, L. (1987). Is the Future Female? Troubled Thoughts on Contemporary Feminism. London, Virago.
- Seidel, G. (1993). "The competing discourses of HIV/AIDS in Sub-Saharan Africa: Discourses of rights and empowerment vs discourses of control and exclusion." Social Science & Medicine **36**(3): 175-194.
- Seidel, J. (1991). Method and Madness in the Application of Computer Technology to Qualitative Data Analysis. Using Computers in Qualitative Research. R. Lee and N. Fielding. London, Sage.
- Select Committee on Science and Technology (2004). Thirteenth Report. London, House of Commons.
- Shefer, T., M. Crawford, A. Strelbel, et al. (2008). "Gender, power and resistance to change among two communities in the Western Cape, South Africa." Feminism & Psychology **18**(2): 157-182.
- Shiva Kumar, A. K. and S. Fukuda Parr (2009). Handbook of Human Development: Concepts, Measures, and Policies. New Delhi, Oxford University Press.
- Shrum, W. (2000). "Science and Story in Development: The Emergence of Non-Governmental Organizations in Agricultural Research." Social Studies of Science **30**(1): 95-124.
- Silberschmidt, M. (2005). Poverty, Male Disempowerment, and Male Sexuality: Rethinking Men and Masculinities in Rural and Urban East Africa. African Masculinities. L. Ouzgane and R. Morrell. New York, Palgrave Macmillan.

- Silverman, D. (2006). Interpreting Qualitative Data, Third Edition. London, Sage.
- Singleton, V. (1995). Networking Constructions of Gender and Constructing Gender Networks: Considering Definitions of Woman in the British Cervical Screening Programme. The Gender-Technology Relation. K. Grint and R. Gill. London, Taylor & Francis.
- Singleton, V. (1996). "Feminism, Sociology of Scientific Knowledge and Postmodernism: Politics, Theory and Me." Social Studies of Science **26**: 445-468.
- Skurnick, J. H., J. Abrams, C. A. Kennedy, S. N. Valentine and J. R. Cordell (1998). "Maintenance of safe sex behavior by HIV-serodiscordant heterosexual couples." AIDS Education and Prevention **10**: 493-505.
- Smith, J. (2005). "Context-bound knowledge production, capacity building and new product networks." Journal of International Development **17**: 647-659.
- Sorenson, C. (2009). "Product development partnerships (PDPs) for neglected diseases: considerations on governance." Health Economics, Policy and Law **4**: 1-10.
- Spallone, P. and D. Steinberg (1987). Made to Order: The Myth of Reproductive and Genetic Progress. Oxford, Pergamon Press.
- Speer, S. A. and J. Potter (2002). From Performatives to Practices. Talking Gender and Sexuality. P. McIlvenny. Amsterdam/Philadelphia, John Benjamins Company: 150-180.
- Stanworth, M. (1987). Reproductive technologies and the deconstruction of motherhood. Reproductive Technologies. M. Stanworth. Oxford, Polity Press: 10-35.
- Stanworth, M. (1987). Reproductive Technologies: Gender Motherhood and Medicine. Minneapolis, University of Minnesota Press.
- Star, S. and J. Griesemer (1989). "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology." Social Studies of Science **19**: 387-420.
- Star, S. L. (1991). Power, Technologies and the Phenomenology of Conventions: on being Allergic to Onions. A Sociology of Monsters? Essays on Power, Technology and Domination. J. Law. London, Routledge: 26-56.
- Stein, Z. A. (1990). "HIV Prevention: The Need for Methods Women Can Use." American Journal of Public Health **80**: 460-462.

- Strathern, M. (2000). Audit culture: Anthropological studies in accountability, ethics and the academy. London and New York, Routledge.
- Strauss, A. L. and J. Corbin (1998). Basics of qualitative research. Techniques and procedures for developing grounded theory. Thousand Oaks, CA and London, Sage Publications.
- Strebel, A., M. Crawford, T. Shefer, et al. (2006). "Social constructions of gender roles, gender-based violence and HIV/AIDS in two communities of the Western Cape, South Africa." Sahara J 3(3): 516-528.
- Suchman, L. (2007). Anthropology as 'Brand': Reflections on corporate anthropology. Colloquium on Interdisciplinarity and Society. Oxford University.
- Sumartojo, E., L. Doll, D. Holtgrave, H. D. Gayle and M. H. Merson (2000). "Enriching the mix: incorporating structural factors into HIV prevention." AIDS 14(Suppl. 1): S1-S2.
- Sylvester, C. (1995). "African and Western Feminisms: World-Traveling the Tendencies and Possibilities." Signs: Journal of Women in Culture and Society 20(4): 941-969.
- Taylor, D. and K. Vintges (2004). Feminism and the Final Foucault. Urbana & Chicago, University of Illinois Press.
- Temple, B. (2002). "Crossed Wires: Interpreters, Translators, and Bilingual Workers in Cross-Language Research." Qualitative Health Research 12: 844-854.
- The Holy Bible, K. J. V. (1999). New York, American Bible Society.
- The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979). The Belmont Report. Ethical principles and guidelines for the protection of human subjects of research, Department of Health, Education, and Welfare Publication No. (OS) 78-0012.
- Tolley, E. E., P. F. Harrison, E. Goetghebeur, et al. (2009). "Adherence and its Measurement in Phase 2/3 Microbicide Trials." AIDS and Behavior DOI 10.1007/s10461-009-9635-x.
- Traore, A. T., M. Querre, H. Brou, V. Leroy, A. Desclaux and A. Desgrees-du-Lou (2009). "Couples, PMTCT programs and infant feeding decision-making in Ivory Coast." Social Science & Medicine 69(6): 830-837.

- Treichler, P. A. (1988). AIDS, Homophobia, and Biomedical Discourse: An Epidemic of Signification. AIDS. Cultural Analysis, Cultural Activism. D. Crimp. Cambridge, MA, The MIT Press.
- Treichler, P. A. (1992). AIDS, HIV, and the Cultural Construction of Reality. The Time of AIDS. Social Analysis, Theory, and Method. G. Herdt and S. Lindenbaum. London, Sage.
- Treichler, P. A. (1999). How to have theory in an epidemic. Cultural chronicles of AIDS. Durham and London, Duke University Press.
- Trevino, A. J. (1992). "Interviewing women: Researcher sensitivity and the male interviewer." Humanity and Society 16(4): 504-523.
- Triandis, H. (1995). Individualism and Collectivism. Boulder, CO, Westview.
- Tucker, T. J. and M. W. Makgoba (2008). "Public-private partnerships and scientific imperialism." Science 320(5879): 1016-1017.
- Turnbull, D. (2000). Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge. Amsterdam, Harwood Academic.
- Turner, B. S. (1992). Regulating bodies: Essays in medical sociology. London, Routledge.
- Turner, B. S. (1997). From governmentality to risk, some reflections on Foucault's contribution to medical sociology. Foucault, health and medicine. A. Petersen and R. Bunton. London, Routledge.
- UNAIDS (2007a). Financial resources required to achieve universal access to HIV prevention, treatment, care and support. Geneva, Joint United Nations Programme on HIV/AIDS.
- UNAIDS (2007b). Good participatory practice guidelines for biomedical HIV prevention trials. Geneva, UNAIDS.
- UNAIDS (2007c). Practical guidelines for intensifying HIV prevention: towards universal access. Geneva, UNAIDS.
- UNAIDS (2008a). Epidemiological Fact Sheet on HIV and AIDS: United Kingdom of Great Britain and Northern Ireland. Geneva, UNAIDS.
- UNAIDS (2008b). Epidemiological Fact Sheet on HIV and AIDS: Zambia. Geneva, UNAIDS.
- UNAIDS (2008c). Report on the global AIDS epidemic. Geneva, UNAIDS.

- UNAIDS (2009). AIDS Epidemic Update. Geneva, UNAIDS & WHO.
- United Nations Development Programme (UNDP) (2009). Human Development Report 2009. New York, UNDP.
- Van De Perre, P., M. Carael, M. Robert-Guroff, et al. (1985). "Female Prostitutes: a risk group for infection with Human T-Cell Lymphotropic Virus Type III " The Lancet **326**(8454): 524-527.
- Van der Wijgert, J. H. H. M. and R. J. Shattock (2007). "Vaginal microbicides: moving ahead after an unexpected setback." AIDS **21**: 2369–2376.
- Vance, C. S. (1991). "Anthropology Rediscovered Sexuality: A Theoretical Comment." Social Science & Medicine **33**(8): 875-884.
- Wajcman, J. (1991). Feminism Confronts Technology. Cambridge, Polity Press.
- Wakeford, N. (2003). "Working With New Media's Cultural Intermediaries: The Development of Collaborative Projects at INCITE." Information, Communication & Society **6**(2): 229-245.
- Walby, S. (1990). Theorising Patriarchy. Oxford Blackwell.
- Waldby, C. (1996). AIDS and the Body Politic. Biomedicine and Sexual Difference. London and New York, Routledge.
- Warren, M. (2001). "From product idea to public health impact: lessons learned from the female condom and their applications to microbicides." AIDS **15 Supplement**(1): S24 <35>.
- Weber, J., K. Desai, J. Darbyshire and on behalf of the Microbicides Development Programme (2005). "The Development of Vaginal Microbicides for the Prevention of HIV Transmission." PLoS Med **2**(5): e142
- Weber, M. (1978). Economy and Society: An Outline of Interpretive Sociology. Berkeley, University of California Press.
- Webster, A. (2002). "Innovative health technologies and the social: Redefining health, medicine and the body." Current Sociology **50**(3): 443-457.
- Weismayer, C., R. Abdulla and J. Anderson (2003). HIV as a Social Disease: The Impact of Behavioral Adjustments on HIV Prevalence Rates. Annual Meeting of the American Sociological Association, Atlanta, GA.
- White, L. (2000). Speaking with Vampires: Rumor and History in Colonial Africa. Berkeley, University of California Press.

- Williams, C. L. and E. J. Heikes (1993). "The importance of researcher's gender in in-depth interview: evidence from two case studies of male nurses." Gender & Society 7(2): 280-291.
- Williams, S. J., J. Gabe and P. Davis (2008). "The sociology of pharmaceuticals: progress and prospects." Sociology of Health & Illness 30(6): 813-824.
- Wilson, D. and D. T. Halperin (2008). "Know your epidemic, know your response": A useful approach - if we get it right." Lancet 372: 423-426.
- Wilton, T. (1997). EnGendering AIDS. Deconstructing Sex, Text and Epidemic. London, Sage Publications.
- Winch, P. (1958). The Idea of a Social Science. London, Routledge & Kegan Paul.
- Winner, L. (1993). "Upon Opening the Black Box and Finding It Empty: Social Constructivism and the Philosophy of Technology." Science, Technology, & Human Values 18(3): 362-378.
- Wolpe, R. (1998). The triumph of autonomy in American bioethics: a sociological review. Bioethics and Society. Constructing the Ethical Enterprise. R. DeVries and J. Subedi. New Jersey, Prentice Hall: 38-59.
- Woodhouse, E., D. Hess, S. Breyman and B. Martin (2002). "Science Studies and Activism: Possibilities and Problems for Reconstructivist Agendas." Social Studies of Science 32: 297-319.
- Woolgar, S. (1992). Some Remarks about Positionism: A Reply to Collins and Yearley. Science as Practice and Culture. A. Pickering. Chicago, University of Chicago Press.
- Woolgar, S. (1993). "What's at stake in the Sociology of Technology? A Reply to Pinch and to Winner." Science, Technology, & Human Values 18: 523-529.
- Woolgar, S., C. Coopmans and D. Neyland (2009). "Does STS Mean Business?" Organization 16(1): 5-30.
- World Bank. "SDK Summary of Recent Capacity Building Remarks." Retrieved 21/11/09, from <http://info.worldbank.org/etools/library/latestversion.asp?240878>
- World Bank. (2010). "World Development Indicators." Retrieved 01/02/10, from <http://datafinder.worldbank.org/gni-per-capita-ppp>.
- World Health Organization. (2009a). "Call for Innovative Technologies that Address Global Health Concerns." Retrieved 08/01/10, from http://www.who.int/medical_devices/iht_call_brochure_web2.pdf.

- World Health Organization (2009b). Microbicides
<http://www.who.int/hiv/topics/microbicides/microbicides/en/>.
- Wouters, P. and A. Beaulieu (2007). "Critical accountability: Dilemmas for interventionist studies of e-science." Journal of Computer-Mediated Communication **12**(2).
- Yamba, C. B. (1997). "Cosmologies in Turmoil: Witchfinding and AIDS in Chiawa, Zambia." Africa: Journal of the International African Institute **67**(2): 200-223.

Appendix 1: Ethical Approvals UK and Zambia

LONDON SCHOOL OF HYGIENE
& TROPICAL MEDICINE

ETHICS COMMITTEE



APPROVAL FORM

Application number: 5100

Name of Principal Investigator Catherine Montgomery

Department Public Health and Policy

Head of Department Professor Anne Mills

Title: The gendering of HIV research and prevention technologies: the example of MDP

Approval of this study is granted by the Committee.

Chair *Tom Meade*
Professor Tom Meade

Date *19 April 2007*

Approval is dependent on local ethical approval having been received.

Any subsequent changes to the consent form must be re-submitted to the Committee.



THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753
E-mail: unzarec@zamtel.zm

Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IORG0000774

22 February, 2008
Ref.: 010-08-07

Ms Catherine Montgomery
C/O Dr Virginia Bond
ZAMBART Project
ZAMBART House, Ridgeway Campus
LUSAKA

Dear Ms Montgomery,

RE: RESEARCH PROPOSAL: "THE GENDERING OF HIV RESEARCH AND PREVENTION TECHNOLOGIES: THE EXAMPLE OF THE MICROBICIDES DEVELOPMENT PROGRAMME (MDP)"

The above research proposal was presented to the Research Ethics Committee meeting held on 5 September, 2007, where changes were recommended. We would like to acknowledge receipt of the corrected version with clarifications. The proposal has now been approved.

CONDITIONS:

- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported at once to this Committee.
- Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a Progress Report (Progress Report Forms can be obtained from the Secretariat).

Yours sincerely,

Dr E. Munalula Nkandu, BSc (Hons), MSc, PgD R/Ethics, PhD
CHAIRPERSON

Date of approval: **22 February, 2008**

Date of expiry: **21 February, 2009**

Appendix 2: Information and Consent Sheets



English Information & Consent Sheets

Participant Information Sheet: Existing MDP 301 participants

Sub-study title: The gendering of HIV research and prevention technologies:
The example of MDP

Investigator: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)7866 899 485; Fax: +44 (0)207 637 5391

It is important for you to understand why this research is being done and what it will involve. If you decide to take part in the study, you will be free to stop at any time. Please ask if there is anything that is not clear or if you would like more information.

Why is this study being done?

Throughout the world the most common way in which the Human Immunodeficiency Virus (HIV) is spread is through sexual contact between men and women. Although condoms are a very effective form of prevention, it is not always possible for a woman to get her partner to agree to use them. You are currently involved in the MDP 301 microbicide trial which is trying to find other methods of protection that can be used by women.

In this sub-study, we want to find out about the interaction of both women and men with the MDP301 trial. We are interested in the way the relationships between men and women might affect the results of this and other trials, as well as their impact on the potential introduction of a future microbicide. Your views and experiences are important in helping to improve the design of future HIV prevention research, which is why this study is being done.

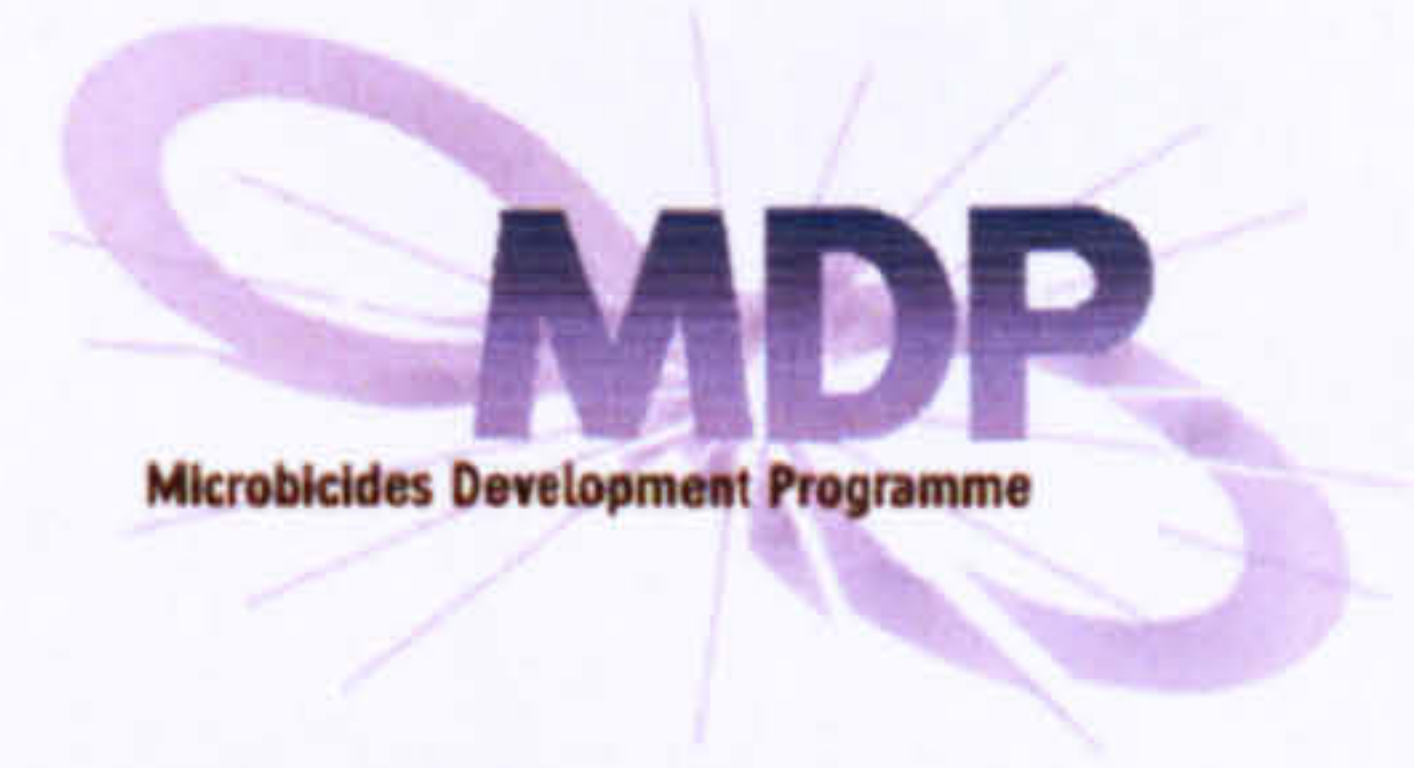
What does participation in the study involve?

Participation involves taking part in either a face to face interview with a member of the study team, or a focus group discussion with other participants, facilitated by a member of the study team. The interview or focus group will last between approximately 60 and 90 minutes. The topics that will be discussed relate to your participation in the MDP301 trial, the role of men in HIV prevention research, and partnership dynamics between men and women. A digital recorder will be used to record the discussion so that an accurate record of what you say can be made for analysis purposes. The recording will only be listened to by members of the study team and will remain entirely confidential.

You will receive compensation for any costs involved with coming to the clinic and this will be xxxx.

Do I have to take part?

No. It is up to you to decide whether you would like to take part. This will not affect your participation in the MDP301 trial or any care you receive now or in the future.



Can I stop taking part?

Yes, you can decide to stop taking part whenever you choose. You do not need to explain why you want to stop taking part to anyone, just that you want to stop.

What are the risks and benefits?

There are no risks associated with this study, although you may find some of the topics discussed embarrassing or difficult to talk about.

The benefit of taking part in this study is that you can contribute to improving future HIV prevention research, helping to find methods that women and men can use successfully to protect themselves.

Will the information from the study be confidential?

Yes. Your contact details will only be available to the staff that run the study. All the other information that is collected will not be identified by your name, only by your trial number. You will be asked if you agree to have the interview recorded and your consent will be sought to use the information in the analysis and results. You will have the option of not being quoted at all, anonymously or otherwise, or included in any of the analyses.

What will happen to the results?

After the study has been completed the results will be analysed. This can take up to 12 months, and after this you will be told the results of the study. The results of the study will be written up and submitted for review by a public health journal. They may also be presented at scientific conferences.

This study has been approved in the United Kingdom by the London School of Hygiene & Tropical Medicine Ethics Committee. In your country it has been approved by:

Thank you for taking the time to read this!

If you have questions about this study you should discuss them with a member of the study team (contact details as provided at the top of this form), or the ethics committee (contact details provided above).



Participant Information Sheet: MDP 301 Non-enrollers

Sub-study title: The gendering of HIV research and prevention technologies:
The example of MDP

Investigator: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)7866 899 485; Fax: +44 (0)207 637 5391

It is important for you to understand why this research is being done and what it will involve. If you decide to take part in the study, you will be free to stop at any time. Please ask if there is anything that is not clear or if you would like more information.

Why is this study being done?

Throughout the world the most common way in which the Human Immunodeficiency Virus (HIV) is spread is through sexual contact between men and women. Although condoms are a very effective form of prevention, it is not always possible for a woman to get her partner to agree to use them. The MDP 301 microbicide trial is trying to find other methods of protection that can be used by women.

This is a sub-study of the main microbicide trial, which you have chosen not to enrol in. We are interested to find out the reasons why people choose not to take part in the trial in order to design better research programmes in the future. Your views and experiences are important in helping to improve the design of future HIV prevention research, which is why this study is being done.

What does participation in the study involve?

Participation involves taking part in an interview with a member of the study team. The interview will last between approximately 30 and 60 minutes. The topics that will be discussed relate to the MDP301 trial, the role of men in HIV prevention research, and partnership dynamics between men and women. A digital recorder will be used to record the discussion so that an accurate record of what you say can be made for analysis purposes. The recording will only be listened to by members of the study team and will remain entirely confidential.

Do I have to take part?

No. It is up to you to decide whether you would like to take part. This will not affect any future participation in the MDP301 trial or any care you receive now or in the future.

Can I stop taking part?

Yes, you can decide to stop taking part whenever you choose. You do not need to explain why you want to stop taking part to anyone, just that you want to stop.

What are the risks and benefits?

There are no risks associated with this study, although you may find some of the topics discussed embarrassing or difficult to talk about.

The benefit of taking part in this study is that you can contribute to improving future HIV prevention research, helping to find methods that women and men can use successfully to protect themselves.

Will the information from the study be confidential?

Yes. Your contact details will only be available to the staff that run the study. All the other information that is collected will not be identified by your name, only by a number. You will be asked if you agree to have the interview recorded and your consent will be sought to use the information in the analysis and results. You will have the option of not being quoted at all, anonymously or otherwise, or included in any of the analyses.

What will happen to the results?

After the study has been completed the results will be analysed. This can take up to 12 months, and after this the results of the study will be written up and submitted for review by a public health journal. They may also be presented at scientific conferences.

This study has been approved in the United Kingdom by the London School of Hygiene & Tropical Medicine Ethics Committee. In your country it has been approved by:

Thank you for taking the time to read this!

If you have questions about this study you should discuss them with a member of the study team (contact details as provided at the top of this form), or the ethics committee (contact details provided above).



**Microbicides Development Programme Trial 301 (MDP 301)
Existing MDP Participants and Non-enrollers Informed Consent**

Sub-study title: The gendering of HIV research and prevention technologies:
The example of MDP

Investigator: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)7866 899 485; Fax: +44 (0)207 637 5391

PLEASE CIRCLE THE CORRECT ANSWER

Have you read or had read to you the Participant Information sheet relating to this study? YES / NO

Have you received enough information about the study? YES / NO

Have any questions you have about the study been answered? YES / NO

Do you understand that you are free to withdraw from the study:

- at any time
- without having to give a reason for withdrawing
- without affecting future medical care
- and without affecting your participation in the trial?

YES / NO

Do you agree to take part in this study? YES / NO

If 'NO' to any of the above the volunteer is ineligible for the study

Signature/Thumbprint of volunteer

Signature or thumb-print		Date of signature	
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Signature of witness

Signature		Date of signature	
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Signature of study staff taking consent

Signature		Date of signature	
Print name			

If you do not wish to be quoted at all, even anonymously, or included in the analyses in any way, please check this box



Participant Information Sheet: MDP Staff and Key Stakeholders

Sub-study title: The gendering of HIV research and prevention technologies:
The example of MDP

Investigator: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)7866 899 485; Fax: +44 (0)207 637 5391

It is important for you to understand why this research is being done and what it will involve. If you decide to take part in the study, you will be free to stop at any time. Please ask if there is anything that is not clear or if you would like more information.

Why is this study being done?

Throughout the world the most common way in which the Human Immunodeficiency Virus (HIV) is spread is through sexual contact between men and women. Although condoms are a very effective form of prevention, it is not always possible for a woman to get her partner to agree to use them. The MDP 301 microbicide trial is trying to find other methods of protection that can be used by women.

In this sub-study, we want to find out about the interaction of both women and men with the MDP301 trial. We are interested in the way gender dynamics (the relationships between men and women) might affect the results of this and other trials, as well as their impact on the potential introduction of a future microbicide. Your views and experiences are important in helping to improve the design of future HIV prevention research, which is why this study is being done.

What does participation in the study involve?

Participation involves taking part in an interview, which will last between 60 and 90 minutes. The topics that will be discussed relate to your involvement in the MDP301 trial and/or other HIV prevention research, the role of men in HIV prevention research, and partnership dynamics between men and women. If you agree, a digital recorder will be used to record the discussion so that an accurate record of what you say can be made for analysis purposes. The recording will only be listened to by members of this sub-study team.

Do I have to take part?

No. It is up to you to decide whether you would like to take part. This will not affect your involvement in the MDP301 trial.

Can I stop taking part?

Yes, you can decide to stop the interview whenever you choose. You do not need to explain why you want to stop taking part to anyone, just that you want to stop.



What are the risks and benefits?

There are no risks associated with this study, although you may find some of the topics discussed embarrassing or difficult to talk about.

The benefit of taking part in this study is that you can contribute to improving future HIV prevention research, helping to find methods that women and men can use successfully to protect themselves.

Will the information from the study be confidential?

All data will be stored securely and only be available to the staff that run the study. Due to the small numbers involved in this study, it is possible that others might be able to identify you and your comments in the analysis and disseminated results. You will be asked if you agree to have the interview recorded and your consent will be sought to use the information in the analysis and results. You will have the option of not being quoted at all, anonymously or otherwise, or included in any of the analyses.

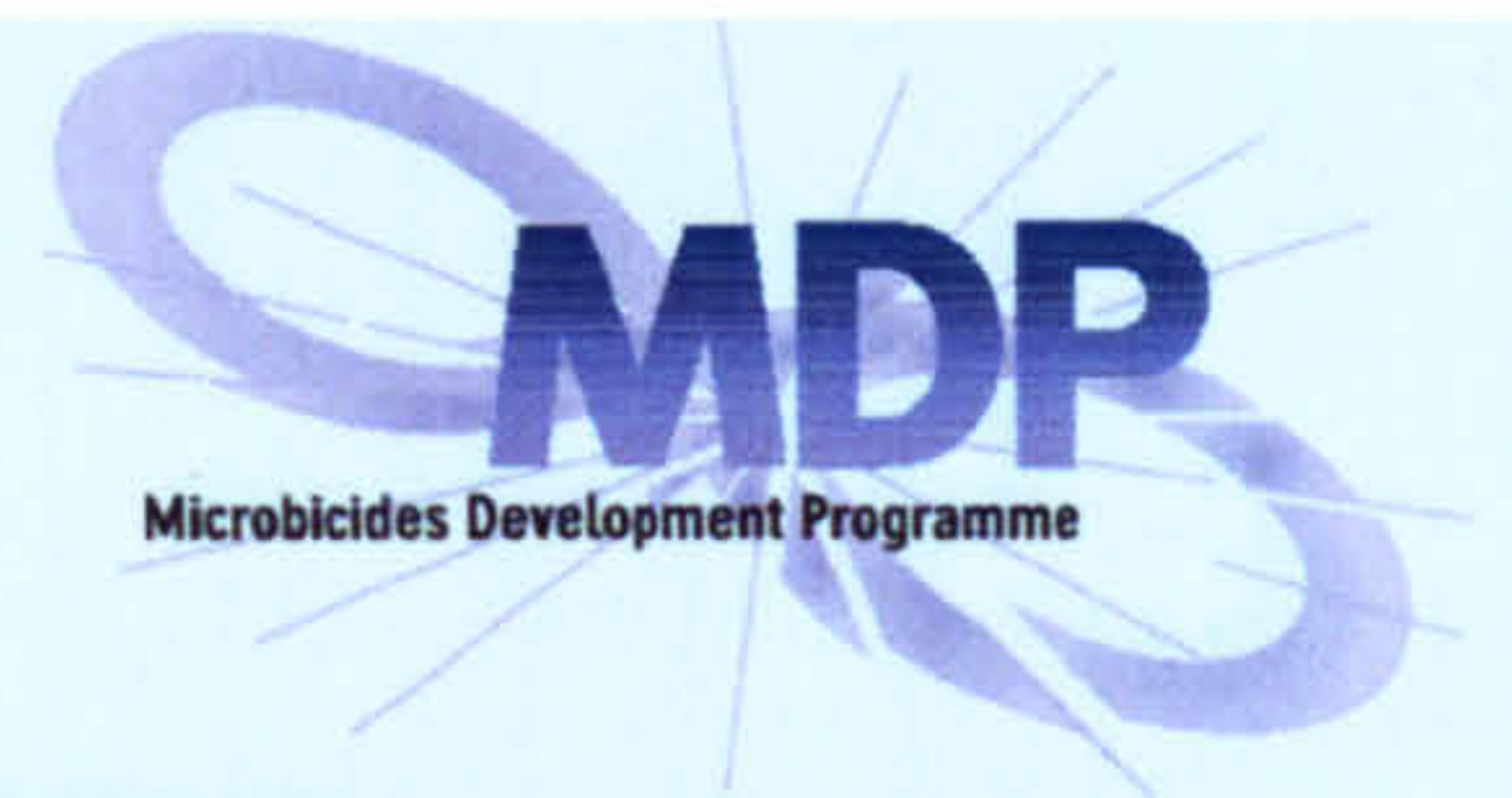
What will happen to the results?

After the study has been completed the results will be analysed. This can take up to 12 months, and after this you will be told the results of the study. The results of the study will be written up and submitted for review by a public health journal. They may also be presented at scientific conferences.

This study has been approved in the United Kingdom by the London School of Hygiene & Tropical Medicine Ethics Committee. In your country it has been approved by:

Thank you for taking the time to read this!

If you have questions about this study you should discuss them with the investigator or a member of the study team (contact details as provided at the top of this form), or the ethics committee.



**Microbicides Development Programme Trial 301 (MDP 301)
MDP Staff & Key Informant Informed Consent**

Sub-study title: The gendering of HIV research and prevention technologies:
The example of MDP

Investigator: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)7866 899 485; Fax: +44 (0)207 637 5391

PART I

PLEASE CIRCLE THE CORRECT ANSWER

Have you read the Participant Information sheet relating to this study? YES / NO

Have you received enough information about the study? YES / NO

Have any questions you have about the study been answered? YES / NO

Do you understand that you are free to withdraw from the study:

- at any time
- without having to give a reason for withdrawing
- without affecting future medical care
- and without affecting your participation in the trial?

YES / NO

Do you agree to take part in this study? YES / NO

If 'NO' to any of the above the volunteer is ineligible for the study

Signature/Thumbprint of volunteer

Signature or thumb print		Date of signature	
Print name			

Signature of witness

Signature		Date of signature	
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Signature of study staff taking consent

Signature		Date of signature	
Print name			



PART II: COMPLETE IF CONSENT TO PART I OBTAINED

You have agreed to participate in an interview as part of the MDP Gender Sub-Study.

Please circle the appropriate answer:

I agree that the interview may be digitally recorded YES / NO

I understand that due to the small numbers involved in this study, it is possible that others might be able to identify me and my comments in the analysis and disseminated results. YES / NO

I agree that text from the interview may be used in reports and publications WITHOUT my name YES / NO

If you do not wish to be quoted at all, even anonymously, or included in the analyses in any way, please check this box

Signature/Thumbprint of volunteer

Signature or thumb print		Date of signature	
Print name			

Signature of witness

Signature		Date of signature	
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Signature of study staff taking consent

Signature		Date of signature	
Print name			



Nyanja Information Sheet & Consent Form

Pepela la mau lawotengako mbali: MDP 301 Participants

Kamutu: Kugwirizana kwa Adzimai ndi adzibambo mu kufufza kwa matenda akaliyonde-yonde ndi njila zochingiliza: chisanzo cha MDP

Mfufuzi: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44(0) 2079272931; Fax: +44 (0) 207 637 5392

Ndi chofunika kuti munvetsetse chifukwa chomwe kufufuza uk kuchitita ndi zochichitika zamukati. Ngati muzaganiza kutengako mbali mumaphunzilowo muzakhala ndi danga loleka panthawi iliyonse. Chonde funsani ngati kuli chilichonse chomwe simuna nvetsetse kapena mufuna kupandululidwa.

Ndi chifukwa chiyani maphunzilo akuchitika?

Mudziko lonse njila ikulu yomwe kadoyo kakaliyonde-yonde kamatengedwa ndi logonana pakati pa mwamuna ndi mukadzi. Ngakhale kuti makondomu alindi mphamvu lo chingilila, nthawi zambiri sichotheka kuli mudzimai kupanga mwamuna wake kubvomela kuyagwiritsa nchito. Pakalipano muli mu MDP 301 Microbicides trial yomwe ikuyetsa njila ina yo chingilila yomwe ingagwiritsidwe nchito ndo adzimai.

Muka kaphunzilo aka tifuna kudziwa momwe adzimai ndi adzibambo mu MDP 301 trial agwirizana. Tifunitsitsa kudziwa ngati chigwirizano cha adzimai ndi adzimai chizakhuza kuzotulukamo zakufufuza uku ndi ena ndi momwe kuzakhuzila ma micribicides yamusogolo Mau anu ndi zomwe mwapitamo ndizofunika kwambiri pakuthandiza kutukula kapangidwe yamaphunzilo yo fufuza kadoyo kakaliyonde-yonde yamusogolo, ichi ndi chomwe maphunzilowa akuchitika.

Kodi kutengamo mabli mumaphunzilo kuphatikizapo chiyani?

Kutengamo mbali kuphatikizapo kufunsidwa ndi wanchito wama phunzilo kapena kupezeka mukagulu kokambitsana ndi ena otengako mbali, koyanganidwa ndi wanchito wama phunzilo. Kufunsidwa kapena ka gulu ko kambitsana kazakhala pafupi-fupi 60 kapena 90 minutes. Zomwe zizakambigwa zilola pakutengako mbali kwanu, mbali ya azibambo muma phunzilo loteteza matenda yakaliyonde yonde, ndi kusiyana kwakunvana pakati pa adzimai ndi adzibambo. Ka wailesi kojambula kazagwiritsidwa nchito kunjambula zokambitsana kotelo kuti zomwe muzakambitsana ziza sungidwa kuti ziyanganidwe. Zomwe zizalembedwa zizanveledwa chabe ndi anchito amaphunzilo ndiponso zizakhala zachisinsi.

Muza landila malipilo yaliyonse yama yendedwe yanu kulingana na malamulo ya MDP yalipo manje.

Kodi ndifunika kutengako mbali?

Ai. Chili kuli inu ngati mufuna kutengako mbali. Ichi sichizakhuza ku kutengako mbali kwanu kwa kufufuza kwa MDP 301 kapena zaumoyo zomwe mulandila tsopano kapena mutsogolo.

Kodi ndi kaleke kutengako mbali?

Inde. Mungathe kuleka pomwe mwafunila. Simuzafunika kufotokas kuli aliyense zifukwa zomwe mwalekela, ndi chakuti mufuna kuleka.

Kodi ndi zotani zowopsya ndi zabwino?

Zowopsya mumaphunzilo awa kulibe, ngakhale kuti mungapeze zokambitsana zina kukhala zonvetsa nsoni kapena zolema kukamba.

Zabwino zotengako mbali ndizakuti mzathilako ndemanga yothukula maphunzilo yotetsa matenda yakaliyone-yonde yamusogolo, kuthandiza kupeza njira yomwe adzimai ndi adzibambo angagwiritse nchito kuzichingilila.

Kodi mau amumaphunzilowa azakhala azhinsinsi?

Inde. Mau yakomwe mukhala ndi anchito oyanganila maphunzilowa. Yonse mau yanu ena yomwe azatengedwa siyaza ziwidwa ndi zina lanu koma ndi nambala yakufufuza. Muzafunsidwa ngati muvomela kuti mafunso yani ajambulidwe ndi chibvolezo chanu kugwirista nchito mau mu analysis ndi mu ma results. Muzakhala ndi chosankha chosafuna kuchulidwa, kwakabisila, kapena mwina mwache, kapena kupezeka mulimonse mu analysis.

Ndi chiyani chizachitika kuzotulukamo?

Pachimalizilo chamaphunzilowa zotulukamo ziyanganidwa. Ichi chingakhale pafupi –fupi miyezi ili 12, pachimalizilo chache muza uzidwa zotulukamo mumaphunzilo. Zotulukamo zamaphunzilo zizalembedwa ndi kuyanganidwa ndi ba public health journal. Yangakambidwense mumisonkhano ya science.

Ili phunzilo ndiloleledwa mu United Kingdom ndi ba London School of Hygiene and Tropical Medicine Ethics Committee. Mu dziko lanu ndilo loledwa ndi: University of Zambia research ethics committee

Zikomo popeze nthawi kuwelenga

Ngati muli ndi mafunso pali maphunzilo munga kambitsane ndi wanchito wamaphunzilo (Kwamene bapezaka; balemba pamwamba pacipepala ici) kapena ba Ethics Committee.



Microbicides Development Programme Trial 301 (MDP 301)
Pepala yo vomekeza kuli botengamo mbali ku MDP na bamene sibantenge mbali

Kamutu: Kugwirizana kwa Adzimai ndi adzibambo mu kufufza kwa matenda akaliyonde-yonde ndi njira zochingiliza.: chisanzo cha MDP

Mfufuzi: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)207 927 2931; Fax: +44 (0)207 637 5391

NDIPEMPA MU CONGE YANKO LO LUNGAMA

Kodi mwawelenga kapena akuwelengelani pepala yotengako mbali ya maphunzilo awa? Inde / ai

Kodi mwalandila mau yokwana yama phunzilo? Inde / ai

Kodi mafunso anu pamaphunzilowa yankhidwa? Inde / ai

Kodi mudziwa kuti muli ndi ufulu wo leka maphunzilo:

- panthawi ili yonse
- kopanda kupasa zifukwa
- kosakhuza khuza umoyo zomwe mulandila
- ndi kusakhuza ku kutengako mbali mukufufuza Inde / ai

Mubvomela kutengako mbali mu maphunzilo awa? Inde / ai

Ngati 'AI' kuli chilli chonse pamwamba apa, ozipeleka afeluka kutenga mbali ndipo SAFUNIKA ku saina cipepala ici

Kusaina/cidido ca cikumo ca wotenga mbali

Kusaina/cidido ca chala		Stiku lo saina	
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Kusaina kwa kamboni

Kusaina		Stiku lo saina	
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Ku saina kwa anchito amaphunzilo omwe atenga chibvomekezo

Kusaina		Stiku lo saina	
Lembani Dzina			

Ngati SIMUFUNA ku ku kambani olo kuzibik munjila iliyonse muli iyi nkhani, tipempa mu chonge muka mbokosi

Tonga Information Sheet & Consent Form

Chipepala casikutola lubazu: Basikutola lubazu bajanika mu MDP 301

Mutwe wabumvuntauzi busyoonto: Kwelanya kwakusola sola HIV abukwabilizi
bwabusyabupampu: Mukohanyo wa MDP:

Mumvuntauzi: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)207 927 2931; Fax: +44 (0)207 637 5391

Cilayandika kapati uti umwisye bu vuntaunsi oobu ncebucitilwa a zyintu zyiya kucitwa. Kuti walisalila kubweza lubazu, ulaangulukide ciindi cili coonse kucileka. Twalomba kuti abuse cili coonse ncoota salalilwa nokuba kuti uyanda kuzyiba tumbi twaambo.

Ino nkaambonzi eeci ciyo ncecicitilwa?

Nike yoonse nzila iiziyilwe kapati mbuli mbobuyambukila bulwazi kwasikalileke (HIV) nja koonana akati ka basankwa a bamakaintu. Nokuba kuti tupila tuli kabotu kapati kubelesya mukukwabilila, takuli kuti lyoonse cilakonzyeka kuti mukaintu ulakonzya kucita kuti mwanakasawa wakwe azumine kutubelesya. Kwaciindi cino ulinjide mu MDP 301 microbicide trial yalo isola kujana zyimbi nzila zyikozya kubelesya bamakaintu mukulikwabilila.

Muciiyo eeci cisyooonto ca ciyo cipati, tuyanda kujana kwaabana twaambo tuliko akati kabamakaintu a basankwa boonse mu MDP 301 trial. Tuyanda kuzyiba mbuli zyilongwe akati kabasankwa a ba makaintu mbozyikozya kuyambukizya mamano a ciyo eeci naanka ma trials aambi antoomwe antalisyo yakubelesya microbicide iciboola. Imizeezo a luzyibo lwako zyintu ziyipati zyikozya kagwasyilizya kubambulula bubambe bwa buvuntaunsi bwakulikwabilila kazunda kasikalileke kuciindi ciboola, elyo nkekaambo kaako eeci ciyo ncecicitilwa.

Hena ku tola lubazu mu ciyo eeci camba nzi?

Ikubweza lubazu kujatikizya mbuli kubuziyigwa buzyigwa busyu a busyu a umwi uujanwa munkamu ya ciyo eeci, naanka kabunga kalanganya mibandi a bamwi wa basikubweza lubazu, kayendelezegwa a umwi wankamu ya ciyo eeci.

Kubuziyigwa buzyigwa nakuba nkamu ilanganya mibandi iyakutola ciindi cilampa akati ka 60 a 90 tunzunzumina. Twaambo tuya kubandikwa tujatikizya mbuli mbobweza lubazu mu MDP 301 trial, lubazu lwa basankwa mubuvuntaunsi bwakulikwabilila kazunda kasikalileke, akati kabasankwa a bamakaintu. Ka muncini ka kubweza majwi nomubandika kaya kubelesyegwa kubweza mubandi kutegwa kuti kukabe buyobozi bubotu bwa zyoyakwaamba zyiya kubelesyegwa mukulangalanga ciyo ku mamano. Mubandi ooyu uya kuswililwa biyo a bantu bamumbunga ya ciyo eeci kwamana, ani kuli maseseke ciindi coonse. Uyakupegwa bulumbu buli boonse mbotikabelesye ciindi ncoya kuboola kucibbadela bwalo oobu buni kuli mbuli kweendelanya a malailile a MDP a sunu.

Hena ndileelede kubweza lubazu?

Peepe. Aawa ciyakuba kuli ndiwe naa usala kubweza lubazu naa peepe. Ooku kusala kwako kunyina mbokuya kukulesya kubweza lubazu ciindi ciboola mu MDP 301 trial nokuba lugwasyo ndopegwa ono naanka ciindi ciboola.

Hena inga ndaleka kubweza lubazu?

Eeye, inga waleka kubweza lubazu kufumbwa mpooyandila. Toyelede kupandulula kumuntu uli oonse ncoyanda kucilekela kubweza lubazu, nkwaamba biyo kuti wacileka.

Hena mbubi nzi alimwi mbubotu nzi buliko?

Kunyina bubu buliko muciiyo eeci nokuba kuti uyakujana tumwi twaambo tujazya nsoni ku twaamba naanka kukatazya ku twaamba.

Bulumbu bwakubweza lubazu mu ciiyo eeci mbwakuti inga wayungizya kubambulula buvuntauzi bwakulikwabilila kazunda kasikalileke ciindi ciboola, kugwasylizya kujana nzila bamakaintu a basankwa nzyobakozya kubelesya kuli kwabilila cakabotu kapati.

Hena twaambo twa ciiyo eeci tuni kuli maseseke?

Eeye. Mbotukozya kukubona kuya kuzyibwa biyo aba yendelezi bapati pati bendelezya ciiyo. Toonse tumwi twaambo tuyakubwezelelwa tatutikazibwe a zyina lyako, pele biyo a nambala. Uyakubuziyigwa kuti naa ulazumina kuti kubuziyigwa buzyigwa ulazumina kuti kubuziyigwa busyigwa ooku kuka bikkwe mu ka munchini alimwi tuya ku kubuzya kuti naa wazumina kuti tukabelesye twaambo ootu mukulanga-linga ciiyo a mamanino a ncinco. Unikuli a kusala kuti toyandi kubwezyelwa twaambo, kuti toyandi kuzyibwa naanka kuli koonse, naanka kasanganiziyigwa kuli koonse mukulanga-linga ciiyo.

Hena mamanino a ciiyo aya kubelesyegwa kucita nzi?

Eeci ciiyo caakumana mamanino a ncico aya kulangwa-lingwa. Eeci cilakozya kutola myezi iili kkumi a yobilo, kwamana twaambo tuyakujanwa twa ciiyo tuyakulembwa a kupegwa kuli ba Public Health Journal kuti bakatusepesepe. Alimwi twaabo ootu inga twatolegwa ku mbungano zyipati zyaba syaabupampu bapati-pati ba lwiiyo.

Eeci ciiyo cakazumiziyigwa mu United Kingdom a baku London School of Hygiene and Tropical Medicine Ethics Committee. Elyo mucisi canu caka zumiziyigwa aba University of Zambia Research Ethics Committee.

Twalumba kapati ku ciindi ncootola kubaala pepa eeli!

Kuti kojisi mibuzyo kujatikizya ciiyo eeci weelede kubandika a bamwi bankamu ba ciiyo (nkobajanwa kulilembedwe atalaa cipepa eeci), naanka ba Ethics Committee.

**Microbicides Development Programme Trial 301 (MDP 301)
Basikutola lubazu bajanika mu MDP abatajaniki mu cipepala cakuzuminizya**

Mutwe wabumvuntauzi busyoonto: Kwelanya kwakusola sola HIV abukwabilizi
bwabusyabupampu: Mukohanyo wa

Mumvuntauzi: Catherine Montgomery, Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK. Tel.: +44 (0)207 927 2931; Fax: +44 (0)207 637 5391

NDALOMBA KUZINGULUSYA MWEENGO KUMWIINGUZI NGOOSALA

Hena wabala naa wakabalilwa cipepa ca sikubweza ubazu kujatikizya EEYE / PEEPE
ciiyo eeci?

Hena wakapegwa twaambo tunji kujatikizya ciiyo eeci? EEYE / PEEPE

Hena mibuzyo yoonse njowajisi kujatikizya ciiyo eeci yayingulwa? EEYE / PEEPE

Hena ulizyi kuti uli angulukide kucileka ciiyo eeci:

- Kufumbwa ciindi
- Kakunyina kupa kaambo kalikoonse ncoocilekela
- Kakunyina kunyonganya busilisi mboyakupegwa ciindi ciboola
- Alimwi kakunyina kunyonganya mbobweza lubazu mu trial

EEYE / PEEPE

Hena ulazumina kubweza lubazu mu ciiyo eeci? EEYE / PEEPE

**Kuti WAKAKA kuli koonse kwaabwa atala awa sikulwaaba tayeledede ku bam u
ciiyo eeci alimwi TAYELEDE kusiba a cipapa cakuzumina.**

KUSIMBA/KUDINTA CINWE N'GANDA CA SIKULYAABA

KUSIMBA NAANKA KUDINTA CINWE N'GANDA		BUZUBA MUMWEZI BWA KUSIMBA	
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Kusimba kwa kamboni

Kusimba		Buzuba mumwezi bwa kusimba	
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Kusimba kwa muntu wacipatipati wendelezya kuzumina

Kusimba		Buzuba mumwezi bwa kusimba	
Lemba Zyina			

Ikuti kotayandi kubwezelwa twaambo toonse, nakuba kutayanda kuzyibwa zina,
naanka kusanganyizyigwa mukulangwalangwa kwa ciiyo munzila ili yoonse, twalomba

ko kwenyuna mucibbokesi